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 1              IN THE UNITED STATES DISTRICT COURT
               FOR THE WESTERN DISTRICT OF TEXAS
 2                      WACO DIVISION

 3  TEXTRON INNOVATIONS INC.*
                           *        April 17, 2023
 4  VS.                    *
                           *  CIVIL ACTION NO. 6:21-CV-740
 5  SZ DJI TECHNOLOGY CO., *
      LTD. ET AL           *

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                BEFORE THE HONORABLE ALAN D ALBRIGHT
 7                   JURY TRIAL PROCEEDINGS
                        Volume 1 of 5
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08:39   1   (Hearing begins.)

08:39   2   THE BAILIFF: All rise.

08:39   3   THE COURT: Good morning, everyone. You

08:40   4   may be seated.

08:40   5   I understand we have a couple of things

08:40   6   to take up. I'm happy to do that.

08:40   7   Good morning, Mr. Siegmund.

08:40   8   MR. SIEGMUND: Good morning, Your Honor.

08:40   9   Do you have a preference on kind of where we start,

08:40   10   Judge?

08:40   11   THE COURT: No.

08:40   12   MR. SIEGMUND: Okay. I think the first

08:40   13   thing is we have an agreement on Rule 50(a) motions. I

08:40   14   think both parties already agreed on this. We're not

08:40   15   going to present any Rule 50 motions until after

08:40   16   Mr. Oushana has come from the other side, and we just

08:40   17   wanted to inform the Court about it.

         18   THE COURT: Okay.

08:40   19   MR. SIEGMUND: I think with that, I think

08:40   20   that probably the most important thing to take up is

08:40   21   the motion for reconsideration.

08:40   22   Does that make sense?

08:40   23   MR. SCHROEDER: That's correct.

08:40   24   Good morning, Your Honor. My name's

08:40   25   Jacob Schroeder from the Finnegan firm. Good to see

—4—

08:40 1   you again.

08:40 2   We wanted to seek Your Honor's

08:40 3   reconsideration of the motion in limine regarding

08:41 4   Textron's ability to refer to DJI as a Chinese military

08:41 5   company. We think that's going to be unduly

08:41 6   prejudicial, and we just seek Your Honor's

08:41 7   clarification and reconsideration of that issue before

08:41 8   we roll into openings where I suspect that's going to

08:41 9   come up, and that's going to -- likely to come up with

08:41 10   the first witness Textron intends to call.

08:41 11   THE COURT: I hear you saying that you

08:41 12   want to -- what I've decided is there some -- usually

08:41 13   if there's a reconsideration, it's something I didn't

08:41 14   consider, and I haven't heard you say anything I didn't

08:41 15   consider.

08:41 16   I mean, you made the point you thought it

08:41 17   was unduly prejudicial. I overruled that. I think it

08:41 18   is a -- the way I understand it and if -- I will say

08:41 19   this. The way I understand it is the plaintiff's

08:41 20   position is is that -- is it the United States who's

08:41 21   determined that they are -- Mr. Meek?

08:41 22   MR. MEEK: Yes, Your Honor. The

08:41 23   Department of Defense.

08:41 24   THE COURT: And so it is a fact. It's

08:41 25   just -- it's a -- you know, if you -- you know, you're

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08:42 1   a company. It's a fact about your company that

08:42 2   you'll -- there'll be facts that may be favorable or

08:42 3   unfavorable about the plaintiff. Those all come in,

08:42 4   and so I'm not sure what the reconsideration is.

08:42 5   MR. SCHROEDER: Yeah, Your Honor. It is

08:42 6   simply the fact that it is an allegation that has been

08:42 7   made by the United States government that hasn't been

08:42 8   proven in any court and to have this jury hear that in

08:42 9   the United States courthouse.

08:42 10   THE COURT: That's not the way I

08:42 11 understood it.

08:42 12   Mr. Meek, my understanding is they've

08:42 13 been identified by the United States.

08:42 14   MR. MEEK: Your Honor, pursuant to a

08:42 15 statute passed by Congress, a set of companies were

08:42 16 identified as potential Chinese military companies to

08:42 17 prevent spillover from civilian to military use.

08:42 18   There was no other investigation other

08:42 19 than the intelligence services of the United States.

08:42 20 So it's not a lawsuit or any sort of proven thing.

08:42 21 It's just pursuant to this law, a list was promulgated.

08:42 22 DJI's on that list.

08:43 23   THE COURT: Okay. I'm -- I think I heard

08:43 24 all that before.

08:43 25   Now, I'm not sure why -- maybe I'll hear

6

08:43　1　from the plaintiff -- why is that -- the fact that

08:43　2　they're on that list, how does that impact the case?

3　　　　　　　　MR. SPEEGLE: Your Honor, this is --

08:43　4　　　　　　　　THE COURT: By "that," I mean

08:43　5　infringement, invalidity or damages.

08:43　6　　　　　　　　MR. SPEEGLE: Yes, Your Honor. This is

08:43　7　Mark Speegle with Baker Botts.

08:43　8　　　　　　　　And it's relative to damages, Your Honor.

08:43　9　And this is because Textron's biggest customer is the

08:43　10　United States government and specifically the

08:43　11　Department of Defense. And so we have -- you know,

08:43　12　when we're balancing the hypothetical negotiation and

08:43　13　the fact that we have a competitive bid situation where

08:43　14　our client is going to be bidding for, you know,

08:43　15　Department of Defense contracts, this is a thing that

08:43　16　we think might be considered.

08:43　17　　　　　　　　THE COURT: Does the -- their status, as

08:43　18　the government has determined in this list, does that

08:43　19　impact their status -- by "their," I mean the

08:43　20　defendants' status -- with how they would -- how they'd

08:44　21　be able to negotiate with the defendant?

08:44　22　　　　　　　　Is that something your damage person's --

08:44　23　　　　　　　　MR. SPEEGLE: Yes. Our expert has made

08:44　24　that position, the fact that Textron's biggest customer

08:44　25　has made these statements about doing business with DJI

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08:44 1   would impact the hypothetical negotiation.

08:44 2   THE COURT: Okay. Then I'm going to

08:44 3   allow it in.

08:44 4   What else do we have to take up?

08:44 5   And that was what I thought was that --

08:44 6   because I have a couple of cases, I know, but I thought

08:44 7   that I'd ask what the relevance of it was and that the

08:44 8   plaintiff had pointed out it was a factor to be taken

08:44 9   up in the hypothetical negotiation.

08:44 10   So I will overrule the motion to

08:44 11   reconsider.

08:44 12   What else do we need to take up?

08:44 13   MR. SIEGMUND: I think both sides had

08:44 14   some objections to opening slides, Your Honor.

08:44 15   THE COURT: Just hand them up and I'll

08:44 16   look at them.

08:44 17   MR. SIEGMUND: Yep.

08:44 18   THE COURT: Okay. I have -- I'm assuming

08:44 19   this is defendants'.

08:44 20   MR. SIEGMUND: That is correct,

08:44 21   Your Honor.

08:45 22   THE COURT: Okay. I have -- you handed

08:45 23   me Page 2?

08:45 24   MR. SIEGMUND: Yes, Your Honor. That's

08:45 25   correct. So it's the first part of that page. We

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08:45   1   think it's improper --

08:45   2   THE COURT: This could win the entire

08:45   3   case for them.

08:45   4   MR. SIEGMUND: It absolutely could,

08:45   5   Your Honor. That's why it's so important.

08:45   6   THE COURT: These slides are so

08:45   7   important.

08:45   8   (Laughter.)

08:45   9   THE COURT: After I talked -- when I talk

08:45   10   to juries afterwards, there's little they talk about

08:45   11   other than what the slides were in opening arguments.

08:45   12   They have such a big impact on them.

08:45   13   MR. SIEGMUND: So our concern here,

08:45   14   Your Honor, is that -- the fact that, one,

08:45   15   Judge Gilliland has already excluded any reliance on

08:45   16   DJI products that come before the filing date of the

08:45   17   '752 patent and Dr. Nourbakhsh's invalidity. That's

08:45   18   already been dealt with.

08:45   19   And we asked them at the meet and confer

08:45   20   last night, are you going to tie those dates, the 2006

08:45   21   to 2011 dates, to the filing date of the '752 patent?

08:45   22   They didn't provide an answer to that. That is

08:45   23   obviously our concern. If they're going -- just going

08:45   24   to talk generally DJI was around, that's fine.

08:45   25   THE COURT: I anticipate -- what I'm

08:45   1   going to guess is they're going to tell the jury what

08:45   2   DJI does. And they're going to talk about their --

08:46   3   they go back to 2006 and that these are products that

08:46   4   were made in 2006, and show the evolution of products,

08:46   5   right?

08:46   6   MR. SCHROEDER: That's exactly right,

08:46   7   Your Honor. There was a Motion in Limine No. 3 that --

08:46   8   THE COURT: I'm good.

08:46   9   MR. SCHROEDER: Thank you.

08:46   10   MR. SIEGMUND: Okay. The next one is the

08:46   11   next slide, Judge, Slide 3. And the -- we have two

08:46   12   objections to this. The first one, I think, is pretty

08:46   13   easy. DJI does not have 38,000 United States patents.

08:46   14   That slide is just misleading. If they would correct

08:46   15   that, we wouldn't have an issue with it. We don't have

08:46   16   a problem with them talking about their slides in

08:46   17   general, but the very top thing literally says U.S.

08:46   18   patent, and that's just factually inaccurate.

08:46   19   THE COURT: Counsel?

08:46   20   MR. SCHROEDER: Yes, Your Honor. I do

08:46   21   not intend to tell the jury that DJI has 39,000 U.S.

08:46   22   patents, but we do have 39,000 patents, applications

08:46   23   and patent publications, including those in the U.S.,

08:46   24   and when you have them as a stack, there's always going

08:46   25   to be one on the top. And I'll be very clear to the

08:46   1   jury when I instruct them -- or when I -- during the

08:46   2   opening that this is how many worldwide patent

08:47   3   applications, publications --

08:47   4   THE COURT: Okay.

08:47   5   MR. SCHROEDER: -- and applications we

08:47   6   have. And our expert is -- it's in his report, and

08:47   7   he's going to talk about it as well.

08:47   8   THE COURT: That's fine.

08:47   9   MR. SCHROEDER: Thank you, Your Honor.

08:47   10   MR. SIEGMUND: The bigger issue, Judge,

08:47   11   with that slide is the callouts to the right or, I

08:47   12   think, to the left there where it says, 2015: 100

         13   patents.

08:47   14   That's really the big issue because what

08:47   15   I think they're going to say is we have 1,500 patents

08:47   16   on the accused functionality in that -- in this case.

08:47   17   And just like you said in the DynaEnergetics case last

08:47   18   week, DynaEnergetics had patents on the accused

08:47   19   product. We weren't allowed to reference that

08:47   20   whatsoever. It's really the same issue here.

08:47   21   It would be improper and confusing for

08:47   22   them to talk about we have 1,500 patents on the accused

08:47   23   functionality.

08:47   24   THE COURT: Counsel?

08:47   25   MR. SCHROEDER: Yes, Your Honor.

08:47 1   So these numbers and this refer -- this

08:47 2 information was in Dr. Nourbakhsh's expert report.

08:47 3 They deposed him. They had their rebuttal, and they

08:47 4 did not file a Daubert on that.

08:47 5   And, in fact, they filed a motion in

08:47 6 limine on it -- it's No. 3 -- and Your Honor denied it

08:47 7 stating DJI may refer generally to its patents and its

08:48 8 company background.

08:48 9   THE COURT: I'm going to -- this slide's

08:48 10 fine with me.

08:48 11   What's next?

08:48 12   MR. SCHROEDER: Thank you, Your Honor.

08:48 13   MR. SIEGMUND: And the very last thing is

08:48 14 Slide 15, Judge. This one should be pretty

08:48 15 straightforward. They are comparing one of the figures

08:48 16 of the prior art, of the Frink patent, with the -- with

08:48 17 a figure from the '909 patent, and obviously that's

08:48 18 improper under the law.

08:48 19   You don't compare two figures of the

08:48 20 asserted patent and the prior art. There's no claim

08:48 21 language on there whatsoever.

08:48 22   That's just confusing, misleading and

08:48 23 entirely improper. I think the Court has ruled several

08:48 24 times in multiple motions in limine that you can't do

08:48 25 that.

08:48   1   MR. SCHROEDER: And, Your Honor, these

08:48   2   are just a figure from their patent and a figure from

08:48   3   the prior art that our expert's going to talk about.

08:48   4   I'm not going to argue to the jury that they can

08:48   5   invalidate a patent because two figures look the same.

08:48   6   THE COURT: I'm going to have you leave

08:48   7   this one out of the opening just because it's -- if --

08:48   8   once the jury has heard your evidence, if you want to

08:49   9   use something like this in closing and it's in context,

08:49   10   that'll be fine.

08:49   11   MR. SCHROEDER: Okay. Thank you,

08:49   12   Your Honor.

08:49   13   THE COURT: I know this -- y'all stayed

08:49   14   up late last night worrying about this stuff. They

08:49   15   have no idea what a figure is or what you'll be talking

08:49   16   about.

08:49   17   And so, you know, I mean, I know you're

08:49   18   all frothy about this, but they don't know what a

08:49   19   figure is. So -- and that's why I'm keeping out of the

08:49   20   opening is -- is you may say something that's right or

08:49   21   wrong, but it's -- we'll have the trial. And if you

08:49   22   want to use -- if you want to say, as you heard Dr. --

08:49   23   your expert say and do it, like, in the context of what

08:49   24   the evidence is, you're perfectly fine doing that.

08:49   25   MR. SCHROEDER: Okay.

08:49   1   MR. SIEGMUND: I think that's everything

08:49   2   from us, Your Honor.

08:49   3   Perhaps it makes sense to take up y'all's

08:49   4   opening slide objections?

08:49   5   THE COURT: Yes, sir.

08:49   6   MR. HIGH: Your Honor, this is

08:50   7   Robert High from Finnegan on behalf of DJI.

08:50   8   So our objections are to Slides 11

08:50   9   through 13, and in particular the fact that they also

08:50   10   come after Slide 10, which is a letter from 2019 which

08:50   11   Textron offered to sell DJI a patent, and then the very

08:50   12   next slides refer to DJI's engineers never even

08:50   13   reviewed the patents. DJI's engineers are not

08:50   14   respecting Textron Innovations' patents --

08:50   15   THE COURT: Yeah. This isn't going to

08:50   16   come in during opening. Slides 11, 12 and 13, again,

08:50   17   are not going to come into evidence -- not going to be

08:50   18   used in opening argument.

08:50   19   Same thing on closing argument. When the

08:50   20   evidence has been put in, these can be used, but

08:50   21   there's -- I've ruled.

08:51   22   What else?

08:51   23   MR. HIGH: That's it from these slides.

08:51   24   We can move on to the depositions.

08:51   25   MR. SPEEGLE: Your Honor --

—14—

	1	MR. HIGH: Oh, actually -- yeah. Go
	2	ahead.
08:51	3	MR. SPEEGLE: Your Honor, I -- it's
08:51	4	Mark Speegle again from Baker Botts.
08:51	5	I understand there is an objection to
08:51	6	this actual deposition testimony on the same basis from
08:51	7	deposition videos. So I think it would be helpful to
08:51	8	talk about whether this testimony, just as it relates
08:51	9	to the evidence coming in in the deposition videos, is
08:51	10	also being objected to.
08:51	11	THE COURT: Well, my problem with it
08:51	12	is for now -- we're not going to take it up now, but
08:51	13	two things.
08:51	14	My problem with this is you've taken two
08:51	15	questions from each party. I don't know what the prior
08:51	16	questions were, questions afterwards were. So it's out
08:51	17	of context, and it's not coming in during opening
08:51	18	argument.
08:51	19	With respect to whether or not, generally
08:51	20	speaking, the fact that whether Mr. Shang or Dr. Shang,
08:52	21	Mr. -- I don't know how to pronounce Ai.
08:52	22	MR. SPEEGLE: Ai.
08:52	23	THE COURT: And whether Mr. Ai or these
08:52	24	other -- we'll take that up -- are these folks that
08:52	25	would be called during --

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08:52   1   MR. SPEEGLE: We did disclose this

08:52   2   deposition testimony potentially to be played today,

08:52   3   and they've objected to these sections as well.

08:52   4   THE COURT: This morning?

08:52   5   MR. SPEEGLE: It'll probably be in the

08:52   6   afternoon, depending on how long the crosses go,

08:52   7   Your Honor.

08:52   8   THE COURT: Let's take it up at lunch

08:52   9   just so we can get started.

08:52   10   But these three slides are excluded. 11,

08:52   11   12 and 13 are excluded. I'm not saying the testimony's

08:52   12   excluded. I'm saying the three slides can't be used in

08:52   13   opening argument.

08:52   14   MR. SPEEGLE: Yes, Your Honor.

08:52   15   MR. RICH: Your Honor, Harrison Rich for

08:52   16   plaintiff. Just to clarify --

08:52   17   THE COURT: Are we done with the slides?

08:52   18   I don't know where we're at. People keep popping up.

08:52   19   I'm not sure what we're doing.

08:52   20   MR. HIGH: There's one issue regarding

08:53   21   source code that, I think, Harrison might be --

08:53   22   (Conference between counsel.)

08:53   23   MR. RICH: This is related to the

08:53   24   deposition designations that we've been referring to.

08:53   25   It's a procedural question. The questions were

08:53 1   translated into Mandarin from English and the answers

08:53 2   were translated back.

08:53 3   We would like to not play the

08:53 4   translations in the Mandarin because it saves about

08:53 5   30 minutes for one witness alone.

08:53 6   THE COURT: But what if the jury wants to

08:53 7   hear them in Mandarin?

08:53 8   MR. RICH: They're going to hear the

08:53 9   answers back to Mandarin.

08:53 10   THE COURT: I'm kidding. I'm kidding.

08:53 11   (Laughter.)

08:53 12   THE COURT: I would be unhappy if you

08:53 13   played the Mandarin so just the English will be fine.

08:53 14   MR. RICH: Thank you, Your Honor.

08:53 15   And to clarify, the Rule 50(a) motion

08:53 16   agreement, it's after the close of all evidence and

08:53 17   just --

08:53 18   THE COURT: I did not understand that. I

08:53 19   thought it was after just -- I don't care. Y'all's

08:53 20   agreement is your agreement. I thought it was going to

08:53 21   come after just one witness. But whatever agreement

08:53 22   y'all have, as long as you all are -- here's the

08:54 23   problem is if I don't understand for sure what their

08:54 24   agreement is, then I'm not sure it's clear on the

08:54 25   record.

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08:54   1   So you all need to put down on the record

08:54   2   what your agreement is so that someone later doesn't

08:54   3   get -- someone doesn't say I screwed up because I

08:54   4   didn't take up the Rule 50 motion.

08:54   5   I don't care when we do it. I understood

08:54   6   it was going to be after you called -- I'm sorry. You

08:54   7   needed -- you were going to -- here's the way I'm

08:54   8   seeing the world. You're allowing them to put a

08:54   9   witness on in their case that ordinarily you would

08:54   10   call, but you're letting them go first and then you'll

08:54   11   do the cross. And you want it to stay open until that

08:54   12   person testifies so that I consider the directed

08:54   13   verdict standard with all the evidence.

08:54   14   That's the way I understand it. If it's

08:54   15   all of their witnesses, that's not what I understand.

08:54   16   MR. RICH: Let me clarify, because as I

08:54   17   understand the agreement, it is after all the

08:54   18   witnesses.

08:54   19   MR. SCHROEDER: Yeah. I'll cut to the

08:54   20   chase. That was our understanding as well, Your Honor.

08:54   21   THE COURT: Okay. I don't care. But

08:54   22   that's fine, and I'm glad we cleared that up.

08:55   23   MR. RICH: Thank you, Your Honor.

08:55   24   MR. SCHROEDER: Thank you.

08:55   25   THE COURT: Okay. And are we done with

08:55 1   objections to the slides plaintiff plans to use?

08:55 2   MR. SCHROEDER: There is one other issue

08:55 3   that I think plaintiffs are going to discuss regarding

08:55 4   the reference to an order from a discovery dispute

08:55 5   that's in those slides as well.

08:55 6   THE COURT: Okay. Where's that at?

08:55 7   MR. SIEGMUND: Your Honor, there's no

08:55 8   other objections to the slides that were discussed last

08:55 9   night.

08:55 10   THE COURT: Well, but why don't you just

08:55 11   tell me -- why doesn't the defendant tell me what they

08:55 12   think there's an objection to and we'll go from there.

08:55 13   MR. SCHLESINGER: Good morning,

08:55 14   Your Honor. Ben Schlesinger from Finnegan on behalf of

08:55 15   the defendants.

08:55 16   It has to do with the adverse inference

08:55 17   instruction. Judge Gilliland decided -- already ruled

08:55 18   that it's not going to be a preliminary instruction,

08:55 19   and it was not included in the preliminary instructions

08:55 20   to the jury.

08:55 21   And we do not think it's appropriate for

08:55 22   them to start discussing the adverse inference. It's a

08:55 23   ruling. It's a discovery dispute.

08:55 24   THE COURT: Is that in the slides?

08:55 25   MR. SCHLESINGER: It is in the slides,

08:55   1   Your Honor.

08:55   2   THE COURT: Well, can you tell me where?

08:55   3   MR. SCHLESINGER: It's --

08:56   4   (Conference between counsel.)

08:56   5   MR. SCHLESINGER: 20 and 21, Your Honor.

08:56   6   THE COURT: Okay. Give me one second.

08:56   7   Okay. When -- let me hear from the

08:56   8   plaintiff why they've put "incomplete" on this slide so

08:56   9   I understand what that means.

08:56   10   MS. MAYNE: Your Honor, Morgan Mayne on

08:56   11   behalf of plaintiff.

08:56   12   So as you're aware, Judge Gilliland did

08:56   13   order an adverse inference jury instruction.

08:56   14   Mr. Schlesinger is correct that he did not include that

08:56   15   instruction in the preliminary jury instructions.

08:56   16   However, Judge Gilliland did suggest that

08:56   17   we raise this issue with you this morning and discuss

08:56   18   the possibility of having that instruction read in to

08:57   19   the jury before we get started today.

08:57   20   And the reason why we think it's

08:57   21   important is because, for one, it does reference the

08:57   22   fact that DJI failed to produce source code.

08:57   23   We should be able to talk about that

08:57   24   during our opening as well as with our expert

08:57   25   witnesses, and we think it would be --

—20—

08:57 1   THE COURT: Okay. You have to back up.

08:57 2 Tell me what is incomplete about what they did.

08:57 3   MS. MAYNE: With respect to their source

08:57 4 code? They failed to produce all relevant source code

08:57 5 in this case, Your Honor.

08:57 6   THE COURT: And did Judge Gilliland

08:57 7 determine that that had happened?

08:57 8   MS. MAYNE: Yes. He did.

08:57 9   THE COURT: Okay. And so -- okay. I'll

08:57 10 hear from the defendant. If the --

08:57 11   MR. SCHLESINGER: Yes, Your Honor.

08:57 12   In the order -- once he did determine

08:58 13 that happened, the result was an adverse inference. It

08:58 14 is a quintessential discovery dispute.

08:58 15   Judge Gilliland did address this issue in

08:58 16 the preliminary instructions and did decide not to

08:58 17 instruct the jury on that.

08:58 18   He did ask counsel to bring it up to

08:58 19 Your Honor so we could discuss it today. And we

08:58 20 believe it'd be, one, confusing, misleading and

08:58 21 prejudicial to hear about discovery disputes.

08:58 22   THE COURT: Well, this isn't a discovery

08:58 23 dispute. I agree with you. And I'm pretty strict

08:58 24 about that. This isn't a discovery dispute. This is a

08:58 25 determination that you all failed to provide all the

08:58 1 source code, correct?

08:58 2   Am I following this correctly?

08:58 3   MR. SCHLESINGER: Yes. And just for

08:58 4 clarity, Your Honor --

08:58 5   THE COURT: That's not a discovery

08:58 6 dispute. That's a determination by the Court, right?

08:58 7   MR. SCHLESINGER: That's correct. And it

08:58 8 was precluded by the Chinese government from export

08:58 9 control, from leaving China.

08:58 10   THE COURT: Okay. Well, that's a

08:58 11 problem. So the -- was this -- I -- gosh. I should be

08:59 12 able to remember. I don't think it was this case where

08:59 13 I had to take up the issues of the problems that the

08:59 14 parties were jointly having in getting information out

08:59 15 of China, but I am familiar with that because of all of

08:59 16 this.

08:59 17   And so if what you're representing -- if

08:59 18 what you're representing to me is that -- well, here's

08:59 19 the problem we have is that the plaintiff has been

08:59 20 prejudiced by not getting the source code.

08:59 21   Let me hear from the plaintiff with

08:59 22 respect to what -- is the -- is your expert going to

09:00 23 say that there was a -- something -- an issue he had

09:00 24 with determining -- was there -- did he have some issue

09:00 25 that he had a hard time resolving because he didn't

09:00	1	have complete source code? Is there something where
09:00	2	he's going to say, I believe this happened; I believe
09:00	3	there's infringement, but -- and I believe the source
09:00	4	code would be this; I didn't have the source code; it
09:00	5	wasn't my fault I didn't have the source code because
09:00	6	it wasn't produced?
09:00	7	Is there something in the case that makes
09:00	8	this relevant?
09:00	9	MS. MAYNE: Yes, Your Honor. We intend
09:00	10	to raise that during our examination of our expert.
09:00	11	THE COURT: Let's raise it now. So
09:00	12	here's the way I'm seeing the world is tell me what --
09:00	13	how you are prejudiced -- how your expert was
09:00	14	prejudiced. I wish we would have -- how your expert
09:00	15	was prejudiced by not receiving the source code.
09:01	16	MS. MAYNE: So, Your Honor, this source
09:01	17	code relates to one of our patents. It relates to
09:01	18	flight control performance which is very important to
09:01	19	our case in this -- our infringement case, and we
09:01	20	believe we should be allowed to talk about the fact
09:01	21	that he did not have full access to the source code.
09:01	22	THE COURT: Okay. Let me -- did your
09:01	23	expert put in his report that I would have the
09:01	24	following opinions or I would be more certain of the
09:01	25	opinions I have had had I had the source code, and I'm --

09:01   1   and I'm prejudiced as an expert on my infringement

09:01   2   opinion because I didn't have certain source code?

09:01   3   MS. MAYNE: Yes. He does talk about the

09:01   4   source code and the fact that he did not have all

09:01   5   access to it.

09:01   6   THE COURT: Okay. Well, how did that

09:01   7   prejudice -- what in his report -- where in his report

09:01   8   does he talk about how he was prejudiced by that?

09:02   9   And is this something we need to take up

09:02   10   now or is this something we can take up before your

09:02   11   expert gets on the stand?

09:02   12   MR. RICH: It's in the opening. In his

09:02   13   supplemental report he ties the missing modules to --

09:02   14   THE COURT: No, no, no. I'm not talking

09:02   15   about the opening. It's not -- this isn't coming in

09:02   16   during the opening. What I care about is, is this

09:02   17   something we need to take up with your expert -- is the

09:02   18   lack of having the source code something that we need

09:02   19   to take up before your expert testifies?

09:02   20   MR. RICH: Yes.

09:02   21   THE COURT: Okay.

09:02   22   MR. RICH: We can take it up in the

09:02   23   morning, right?

09:02   24   (Conference between counsel.)

09:02   25   MR. RICH: It's in the opening but --

—24—

09:02	1	THE COURT: It's not in the opening.
09:02	2	It's not going to be in the opening because I'm going
09:02	3	to determine -- I'm going to -- it's not going to be in
09:02	4	the opening.
09:02	5	So what I need to know is when is your
09:02	6	expert going to testify, your infringement expert?
09:02	7	MR. RICH: Tomorrow.
09:02	8	THE COURT: Okay. Then what we'll do is
09:02	9	at the end of today, we'll take up this issue, and what
09:02	10	I need for you all to be prepared to do -- "you all"
09:03	11	being the plaintiff -- is show me where there was a
09:03	12	prejudice to you because you didn't have the source
09:03	13	code.
09:03	14	And I don't want you to stand up here and
09:03	15	say because -- we were prejudiced because we didn't
09:03	16	have the source code. That's not going to get you --
09:03	17	what I want you to say is, in either direction, he
09:03	18	would say -- it's a he, I'm assuming? Okay.
09:03	19	Where your expert would say I could have
09:03	20	done more had I had this, and this is what I would have
09:03	21	done to make -- anything where his opinion would be
09:03	22	stronger, he can tell the jury about or where you worry
09:03	23	that the defendant might attack him because he didn't
09:03	24	have -- he couldn't do something, and his response
09:03	25	would be, well, I could have done that, but I didn't

25

09:03   1   have the source code. So I need to know specifically

09:03   2   where you're prejudiced by not having the source code,

09:03   3   then once I understand that, I'll take up the -- I'll

09:03   4   try and figure out a way to deal with the fact that

09:04   5   he -- y'all were prejudiced and the defendant didn't

09:04   6   produce it, but the defendant wasn't able to produce it

09:04   7   because of restrictions from the Chinese government

09:04   8   and, therefore -- and the jury can decide how they

09:04   9   assess that.

09:04   10   I mean, it's not your fault the Chinese

09:04   11   government wouldn't allow it out. It's not their

09:04   12   fault. It's just a fact of what happened, and we'll

09:04   13   deal with it then.

09:04   14   But what you all need to be prepared at

09:04   15   the end of today to tell me is how you're prejudiced by

09:04   16   not having the source code.

09:04   17   MR. RICH: Understood.

09:04   18   THE COURT: Okay. What else do we need

09:04   19   to take up before the jury comes in?

09:04   20   And if I wasn't clear, I'll say it one

09:04   21   more time. This issue is not going to come up during

09:04   22   opening.

09:04   23   So does that --

09:04   24   MR. SCHROEDER: Nothing else from

09:04   25   defendants, Your Honor.

26

09:04 1   THE COURT: Anything else from plaintiff?

09:04 2   MR. MEEK: No, Your Honor.

09:04 3   THE COURT: Okay. I'm going to give you

09:04 4   all five minutes to make sure your slides are

09:04 5   consistent with what I've ordered, and then I'll bring

09:05 6   the jury out.

09:05 7   THE BAILIFF: All rise.

09:05 8   (Recess taken.)

09:14 9   THE BAILIFF: All rise.

09:14 10   THE COURT: Please remain standing for

09:14 11 the jury.

09:14 12   (Jury entered the courtroom.)

09:14 13   THE COURT: Thank you. You may be

09:14 14 seated.

09:14 15   Jen, would you call the case, please?

09:14 16   DEPUTY CLERK: A civil action in Case

09:14 17 6:21-CV-740, Textron Innovations Incorporated versus

09:15 18 SZ DJI Technology Co., LTD, et al. Case called for a

09:15 19 jury trial proceeding.

09:15 20   THE COURT: Could I have announcements

09:15 21 from counsel, please? If you'd introduce yourselves

09:15 22 and your clients.

09:15 23   MR. MEEK: Thank you, Your Honor. For

09:15 24 plaintiff Textron Innovations, my name's Kevin Meek.

09:15 25 I'm from the McDermott firm.

09:15   1   We have the honor of representing the

09:15   2   Textron family of companies today.

09:15   3   THE COURT: And would you introduce the

09:15   4   gentleman to your far right?

09:15   5   MR. MEEK: Thank you, Your Honor.

09:15   6   Ladies and gentlemen, this is

09:15   7   James Runstadler. He is the president of Textron

09:15   8   Innovations Inc. and the executive director of

09:15   9   intellectual property for the Textron conglomerate.

09:15 10   THE COURT: Counsel?

09:15 11   MR. SCHROEDER: Good morning, Your Honor.

09:15 12   My name's Jacob Schroeder from the law firm of Finnegan

09:15 13   Henderson on behalf of the DJI defendants in this case.

09:15 14   And with me at counsel table is

09:15 15   Mr. Qingyu Yin. And we also have Mr. Wayne Baker,

09:15 16   representative from DJI Creative Studios.

09:15 17   THE COURT: Welcome. Thank you, sir.

09:15 18   Ladies and gentlemen, good morning. Let

09:15 19   me formally introduce myself to you. My name is

09:16 20   Alan Albright. I'm the United States district judge

09:16 21   for the Waco Division of the Western District of Texas.

09:16 22   I've been sitting here -- I surprise

09:16 23   myself whenever I figure this out but -- almost five

09:16 24   years. Hard to believe. It's a great honor to sit

09:16 25   here.

09:16   1   And I hope you understand how very much I

09:16   2   appreciate the fact that you all are here and willing

09:16   3   to serve on this jury. These lawyers have invested

09:16   4   enormous amounts of time and effort in preparing the

09:16   5   case for you.

09:16   6   This case, as I'm sure you know, is a

09:16   7   patent case which means we'll be -- you'll be hearing

09:16   8   about some technologies. I find these cases to be

09:16   9   fascinating. And I also find them to be easy to try

09:16   10   because, as a general rule, the lawyers are

09:16   11   outstanding. You have the -- I think the very best

09:16   12   lawyers in America who are trying this case. So you

09:16   13   should look forward to a week where I think the lawyers

09:16   14   will do a great job.

09:16   15   You'll find, I think, the testimony and

09:16   16   evidence interesting. And at the end of the week,

09:17   17   we'll -- you'll get to decide, you know, who wins.

09:17   18   So what's going to happen now is the

09:17   19   lawyers --

09:17   20   Are you going to do an opening at the

09:17   21   front too? Okay.

09:17   22   What's going to happen now is the lawyers

09:17   23   are both going to do opening arguments on behalf of

09:17   24   their clients. I'll remind you that these are just

09:17   25   arguments. Hopefully they'll set out a blueprint for

29

09:17	1	you, what they anticipate the evidence is going to
09:17	2	show.
09:17	3	But until the plaintiff calls their first
09:17	4	witness, it's not evidence. It's just what the lawyers
09:17	5	are going to argue to you. That doesn't mean it's not
09:17	6	important. It is important, but it's just the -- what
09:17	7	the lawyers hope the evidence will show.
09:17	8	With that being said, Mr. Meek, are you
09:17	9	going to be giving the opening argument?
09:17	10	MR. MEEK: I am, Your Honor.
09:17	11	THE COURT: Please.
09:17	12	Do you want any kind of warning on time?
09:17	13	MR. MEEK: Your Honor, if I could get
09:17	14	five minutes, that'd be great.
09:17	15	THE COURT: That'd be great.
09:17	16	OPENING STATEMENT ON BEHALF OF THE PLAINTIFF
09:17	17	MR. MEEK: Good morning.
	18	THE JURY: Good morning.
09:18	19	MR. MEEK: You all have monitors in front
09:18	20	of you that should be showing the slides that I'm going
09:18	21	to -- can everybody see them okay?
	22	THE JURY: Yes.
09:18	23	MR. MEEK: Great. I appreciate that.
09:18	24	So as you heard earlier, my name is
09:18	25	Kevin Meek. I'm an attorney in Austin, Texas with the

09:18   1   law firm of McDermott Will & Emery.

09:18   2   And as you've guessed from the way I

09:18   3   sound, I'm from Texas. I grew up in Dallas. I was

09:18   4   born there. I went to Texas A&M for engineering

09:18   5   school, then I went that way, over to UT, for law

09:18   6   school. I went back up to start my career in Dallas,

09:18   7   and then I came back to Austin about 13 years ago.

09:18   8   So I've been -- I got Waco surrounded

09:18   9   pretty much. I spent a lot of time here. I have

09:18   10   enjoyed my time here. I'm thrilled to be here.

09:18   11   I am married to my wife Donna for

09:18   12   37 years. We have three grown kids. We have two very

09:18   13   non-grown grandkids that are about that big, and we got

09:18   14   one on the way in two weeks. But I think Donna's

09:18   15   counting in hours now so I don't think she measures it

09:18   16   in weeks.

09:18   17   Here are the folks on this side of the

09:19   18   courtroom, and I do agree with Judge Albright that the

09:19   19   attorneys that you're going to be dealing with are

09:19   20   excellent. And I'd like to introduce our team.

09:19   21   They're going to be coming in and out all

09:19   22   week, but I wanted to give you their name: Harrison

09:19   23   Rich, who's right here; Kurt Pankratz; Mr. Mark

09:19   24   Siegmund, you've met him in voir dire, from Waco;

09:19   25   Morgan Mayne is right behind here.

31

09:19   1   We don't have enough chairs.

09:19   2   Emily Deer is back here, and then

09:19   3   Caroline Duncan is sitting next to her. Boyang is

09:19   4   right there and Lance Goodman as well.

09:19   5   Mark Speegle is with me at counsel table.

09:19   6   We also have some paralegals that you might see: Sonja

09:19   7   Guenter, Marco Giguere and Phillip Pope. And as I like

09:19   8   to say, on keyboards, I have my IT guy, Brian

09:19   9   Patterson.

09:19   10   I also want to give a little bit more

09:19   11   introduction to Mr. Runstadler. James Runstadler is

09:19   12   the president of the plaintiff which is Textron

09:19   13   Innovations Incorporated. We're going to talk about

09:19   14   who they are.

09:19   15   He is also the executive director of

09:20   16   intellectual property for the entire Textron family of

09:20   17   companies, and it is a relatively large family.

09:20   18   So he has a role of running his own

09:20   19   company, and he also has a role assisting the other

09:20   20   companies in the family.

09:20   21   Textron Innovations manages intellectual

09:20   22   property for the entire conglomerate of companies. So

09:20   23   it's -- essentially they took all of those functions

09:20   24   and put them in one spot. Okay?

09:20   25   It's a one-stop shop if you have to deal

09:20   1   with the Textron family on intellectual property.

09:20   2   That'd be patents, trademarks or patent rights.

09:20   3   Now, they don't make a lot of money.

09:20   4   That's not their job. Their role is not to sell

09:20   5   products. Their role is to manage all the patents and

09:20   6   trademarks for everybody else that they are selling

09:20   7   products.

09:20   8   Okay. Textron is an amazing group of

09:20   9   companies. Very, very diverse. In the upper corner,

09:20   10   you see, that's a camshaft for an engine being treated

09:20   11   in an auto parts division.

09:20   12   That mean-looking boat is a drone ship

09:20   13   that can fly -- it's a robot ship that they build in

09:21   14   another division.

09:21   15   The cool-looking airplane there is a

09:21   16   Beechcraft. They also make the Cessna airplanes.

09:21   17   In the lower right-hand corner, anybody

09:21   18   who's been on a golf course knows how nice it is to

09:21   19   have an E-Z-Go Golf Cart. They make that.

09:21   20   And then I buried the lead here, but the

09:21   21   one on the right, that's a brand new Bell Helicopter.

09:21   22   And Bell Helicopter is very important to this case

09:21   23   because that's where the inventions came from. Bell is

09:21   24   right -- which way -- that way -- about 85, 90 miles,

09:21   25   sitting right by DFW airport, and it is an

33

09:21   1   extraordinary place. It's been around since the 1930s.

09:21   2   In 1947, General Chuck Yeager was the first human being

09:21   3   to ever break the sound barrier. That was in the

09:21   4   Bell X-1, which is now sitting in the Smithsonian

         5   Institute.

09:21   6   The first helicopter ever was the

09:21   7   Bell 30. That's a picture of the Bell 47, which was

09:21   8   released in 1947. Anybody that likes the TV show

09:22   9   M*A*S*H recognizes that helicopter. It changed the way

09:22   10   soldiers are moved around. That is actually in a

09:22   11   design museum because of the iconic glass ball is -- is

09:22   12   an artwork.

09:22   13   Maybe you're not as familiar with the

09:22   14   modern aircraft, but the next one down is the V-22

09:22   15   Osprey. That's the first aircraft in the world that is

09:22   16   able to take off like an airplane -- or excuse me --

09:22   17   like a helicopter, straight up and down, and then

09:22   18   transition to flight and go 200, 300 miles an hour.

09:22   19   That is a very important aircraft as

09:22   20   you'll hear. The Army just awarded the contract.

09:22   21   They're going to buy over $70 billion worth of those to

09:22   22   move troops around.

09:22   23   In the bottom right corner is a very

09:22   24   interesting aircraft. You'll notice it doesn't have a

09:22   25   cockpit. There's no place for anybody to sit. That's

34

09:22 1   a drone. That's what a -- that's what drone means. It

09:22 2   means an aircraft that doesn't have a pilot.

09:22 3   That's the Eagle Eye, and it was

09:22 4   developed in the late '90s and early 2000s. And one of

09:22 5   the inventions in this lawsuit came out of that

09:23 6   project.

09:23 7   As I said, drones are just big aircraft

09:23 8   that don't have -- big or little aircraft that don't

09:23 9   have pilots. They can be very large. The Eagle Eye is

09:23 10 about 15-feet long and about 6-feet high. So it's a

09:23 11 very big, big aircraft. And they can be tiny. They

09:23 12 can be held in your hand.

09:23 13   The drones that we're going to talk about

09:23 14 in this case that are made by the defendant DJI are

09:23 15 relatively small. You can pick them up and carry them

09:23 16 around. They're not large aircraft like that.

09:23 17   That is a picture -- just -- that's a

09:23 18 picture of the Eagle Eye. It's sitting in its own

09:23 19 museum at Naval Air Test and Evaluation Museum.

09:23 20   The Bell Textron, the Bell Helicopter

09:23 21 division of Textron, has been revolutionizing aviation

09:23 22 since its founding. That's why all these things end up

09:23 23 in museums. They're that important.

09:23 24   Bell Textron's lifeblood is innovation.

09:23 25 If it's not inventing new things, it fails. And if it

09:23   1   doesn't protect the things it invents and lets other

09:24   2   people use them without permission, it fails.

09:24   3   That's why we've asked you to be here. I

09:24   4   want to thank you in advance for your attention and

09:24   5   your role in helping us protect the intellectual

09:24   6   property.

09:24   7   Who is the defendant?

09:24   8   Defendant is DJI. They're a company in

09:24   9   Shenzhen, China. They make a lot of money, billions of

09:24   10   dollars of revenue. They're a relatively young

09:24   11   company. They were founded in 2006. They were founded

09:24   12   by a guy named Frank Wang. He is known as the first

09:24   13   drone billionaire. He's a young guy. He's only about

09:24   14   43 years old.

09:24   15   To put that in perspective, when the

09:24   16   Eagle Eye that I showed you earlier was first taking

09:24   17   off in 2000, Mr. Wang was about 20 years old. He was

09:24   18   probably in college.

09:24   19   They make drones in the United States,

09:24   20   and as -- the evidence will show that they take those

09:24   21   drones, import them into the United States. The drones

09:24   22   that are sold in the United States are what we're

09:24   23   talking about in this lawsuit. That is the infringing

09:25   24   activity. That's why we have a problem.

09:25   25   The drones we're talking about are not

09:25   1   cheap. One of the reasons Mr. Wang and DJI make so

09:25   2   much money is because, per unit, we're talking about

09:25   3   thousands of dollars.

09:25   4   These are not the things you see for 50

09:25   5   bucks or 20 bucks. These are very sophisticated drones

09:25   6   that are used in commercial applications as well as

09:25   7   very, very sophisticated hobbyists and toys.

09:25   8   I'd like to spend a moment talking about

09:25   9   respect, okay?

09:25   10   Respect is something hopefully we're

09:25   11   taught at a very early age. Respect your parents,

09:25   12   respect your elders, respect the law, respect property.

09:25   13   This is a property case. If you see a

09:25   14   fence line, you know you're not supposed to cross that

09:25   15   fence line unless you get permission.

09:25   16   Even though we're all taught respect,

09:25   17   hopefully at an early age, sometimes it doesn't take,

09:25   18   and that's why we're here today.

09:25   19   The evidence is going to show that the

09:26   20   defendant DJI has not, will not and won't respect

09:26   21   Textron's patent rights in these features of these

09:26   22   drones.

09:26   23   Patents are not some kind of a sideshow

09:26   24   in the United States. It's not esoteric. It's the

09:26   25   core of who we are.

09:26   1   Not only are our inventions part of our

09:26   2   history and our heritage, names like Alexander Graham

09:26   3   Bell and Thomas Edison and the Wright brothers, it's

09:26   4   part of our foundation as a nation.

09:26   5   This is Article 1, Section 8 of the

09:26   6   Constitution, and it says in plain -- that inventions

09:26   7   will be protected. That inventors will have rights to

09:26   8   those inventions.

09:26   9   Last week, I think you might remember,

09:26   10   you heard a short video about patents where they talked

09:26   11   about what they were. They talked about them as if

09:26   12   they were a property deed with boundary lines.

09:26   13   Do you remember that?

09:26   14   If you own a piece of property and it has

09:26   15   a boundary line, and let's say you have a piece of land

09:26   16   and Exxon comes up and says, we're going to drill on

09:27   17   your land. Well, no. You're not. That's my land.

09:27   18   You can't do that without my permission.

09:27   19   Then Exxon says, well, wait a second.

09:27   20   You're not drilling so we get to. Once again, no.

09:27   21   Your land is yours to do what you will with it,

09:27   22   including let it sit if you want to. Whether or not

09:27   23   you're using it, it's still trespassing.

09:27   24   Patents have boundary lines too. These

09:27   25   paragraphs at the end of the patent called "claims,"

09:27   1   that was discussed, you know, in brief in the video.

09:27   2   We're going to go into claims in detail.

09:27   3   But in general, claims are just a list of

09:27   4   things, pieces that you have to have in order to

09:27   5   infringe the claim. Those pieces are called

09:27   6   "elements."

09:27   7   If you have all the elements of a claim

09:27   8   in a single claim, you infringe that claim. It's that

09:27   9   simple. You just go through it like a checklist, and

09:27   10 if you get all the checks, that's an infringement.

09:27   11   We believe that the evidence will show

09:27   12 that the drones sold by DJI have all the elements of

09:27   13 the claims we've talked about and the ones we're going

09:27   14 to present. And we believe that because of that, DJI

09:27   15 has trespassed on Textron's property, and they haven't

09:28   16 compensated Textron for that trespass.

09:28   17   We are very grateful to live in a country

09:28   18 like the U.S. that has a law that tells us what happens

09:28   19 when that trespass happens.

09:28   20   What happens is, under the U.S. law, the

09:28   21 trespasser, the infringer, has to pay the patent owner

09:28   22 a reasonable royalty. That's the damage amount for the

09:28   23 trespass.

09:28   24   Bell does not want to be here. Textron

09:28   25 does not like patent litigation at all. It is a last

09:28   1   resort. Bell tried to resolve this.

09:28   2   In 2019, Bell sent a letter to DJI

09:28   3   saying, let's talk about a transaction where you can

09:28   4   get rights to these patents. The negotiation not

09:28   5   didn't -- just didn't go well, it never happened. DJI

09:28   6   never responded to this letter.

09:29   7   The plaintiff in this case is Textron

09:29   8   Innovations. I already talked to you about

09:29   9   Mr. Runstadler. He's going to talk to you very soon

09:29   10   about his role and what he does and how important

09:29   11   Textron Innovations is to the family of companies.

09:29   12   We've also brought an inventor from each

09:29   13   of the two patents, Mr. James Harris and Mr. Kevin

09:29   14   Christensen. So they will be up here in the witness

09:29   15   box to tell you about their inventions and why they're

09:29   16   important.

09:29   17   Mr. Wittmaak, John Wittmaak, is also

09:29   18   going to testify about all the work that Bell has done

09:29   19   with drones over the years and continues to do today.

09:29   20   The pictures of these guys are in your

09:29   21   jury notebook, and you have been given pens. You can

09:29   22   write notes as you hear the testimony.

09:29   23   One of the things is that there's going

09:29   24   to be a lot of exhibits, documents, that are going to

09:29   25   be put into evidence. They'll have funny numbers like

09:29   1   Plaintiff 1 or Defendant 1. If you think you want to

09:29   2   see something later, write the number down. It'll be

09:29   3   much easier to find later.

09:29   4   The first patent we -- there's two

09:29   5   patents, and the first one called -- covers what's

09:30   6   called the "following feature." The following feature

09:30   7   is what it sounds like. It's the ability of the

09:30   8   drone -- the -- to -- it's in the air and it follows

09:30   9   something on the ground, okay?

09:30   10   Mr. James Harris helped invent the '909

09:30   11   patent. You can see his name on the front of it, and

09:30   12   you'll see that in a second when we get it into

09:30   13   evidence.

09:30   14   Got a little animation. So the drone

09:30   15   figures out what it's -- how it is placed relative to

09:30   16   something on the ground and then is able to match its

09:30   17   speed with the thing on the ground.

09:30   18   The way I've seen these things is --

09:30   19   because my kids watching YouTube videos -- these --

09:30   20   these are -- this is how the drones takes pictures of

09:30   21   some crazy guy coming down a mountain on a snowboard or

09:30   22   coming down a mountain on a mountain bike or coming

09:30   23   down a mountain on a parachute. For some reason, these

09:30   24   kids don't want to stay on the mountains. They want to

09:30   25   get off as fast as they can, and they need it to record

09:31   1   it.

09:31   2   The next patent is the "hovering

09:31   3   feature." The first one was the following feature;

09:31   4   this is the automatic hovering feature. And we've

09:31   5   brought Mr. Kevin Christensen, who's one of the

09:31   6   inventors, to talk about it.

09:31   7   The hovering feature is just like it

09:31   8   sounds. The drone is flying. And if the controls are

09:31   9   released, for example, if you just want to -- you're

09:31   10   distracted or you drop the thing or you just want to

09:31   11   pause, the drone -- you can see, he has the control and

09:31   12   then he releases it, the drone automatically stops and

09:31   13   hovers in place.

09:31   14   This is incredibly important to make

09:31   15   these drones easier to fly. Imagine if that wasn't

09:31   16   there and you tripped over something, dropped your

09:31   17   thing and your drone just takes off or crashes into a

09:31   18   tree.

09:31   19   So this control system makes drones able

09:31   20   to -- so that an amateur can take it right out of the

09:31   21   box and fly it.

09:31   22   What evidence will you see? So I already

09:31   23   talked about the claim, right? It's on one side with

09:32   24   all the checkmarks and we're going to look at it.

09:32   25   What's on the other side? Well, we're going to present

09:32 1   you lots of stuff. We're going to show you the drones

09:32 2   themselves. We're going to show you documents that

09:32 3   describe manuals, pictures, things like that. There's

09:32 4   witnesses that are going to testify on -- to how the

09:32 5   drones work.

09:32 6   And finally, there's source code. The

09:32 7   source code is what goes inside the computer brain

09:32 8   inside the drone, tells it how to operate. These

09:32 9   things are actually flying computers. They are -- they

09:32 10   have processors inside them that are running software.

09:32 11   The source code is how we tell you what that software

09:32 12   does.

09:32 13   This is one of DJI's engineers that we

09:32 14   deposed, Mr. Shang. He's a senior engineer and has

09:32 15   worked at DJI for seven years. He has information --

09:32 16   he knows what goes on inside these drones. And in the

09:32 17   context of his deposition -- we will show you this

09:33 18   deposition -- he admitted that the DJI drones have

09:33 19   control movement in every direction for the auto hover.

09:33 20   It's not moving around.

09:33 21   They have lateral, up and down,

09:33 22   directional and spinning, and they automatically hover

09:33 23   in place. In other words, you don't have to push a

09:33 24   button or something like that. If you release it, it

09:33 25   automatically does it.

43

09:33   1   We're -- also brought you two expert

09:33   2   witnesses. Expert witnesses are very, very

09:33   3   accomplished, experienced people that come in and study

09:33   4   the case and then give their opinions on what they

09:33   5   think how the thing should work out.

09:33   6   This is my friend, Dr. Bill Michalson.

09:33   7   Dr. Michalson is incredibly educated. He has a

09:33   8   bachelor's, master's and Ph.D. in electrical

09:33   9   engineering. He's also a current professor of not just

09:33   10   one thing, but he's robotics, computer science,

09:33   11   electrical engineering and mechanical engineering, also

09:33   12   has a lot of engineering -- industry experience in

09:33   13   aerospace.

09:33   14   Dr. Michalson and the Bell inventors will

09:34   15   explain this a lot better than I can, but essentially

09:34   16   in order to follow something, you have to receive data

09:34   17   about what's on the ground, make a calculation on how

09:34   18   to stay with it and then follow it. We will go into

09:34   19   this in much, much more detail, and as a result, we

09:34   20   will be able to look at all the pieces.

09:34   21   This is an actual claim. Remember I

09:34   22   talked about claims. This is an actual claim and each

09:34   23   piece is an element. And Dr. Michalson will go down

09:34   24   and show you where each piece is in the DJI drones. If

09:34   25   he finds it, he'll put a green checkmark by the

44

09:34   1   element. If we get all checks, DJI drones infringe

09:34   2   that claim.

09:34   3   The automatic hovering patent is a

09:34   4   little -- it's a simpler function, but it's a little

09:34   5   more difficult to understand. It has to control

09:34   6   movement in every direction. Hover means stay there,

09:34   7   right? Stay where you are. So that means it can't go

09:34   8   up or down. It can't go right or left. It can't go

09:35   9   towards your back. And then the other one, it can't

09:35   10   spin. It's not sitting there just whirling.

09:35   11   So in order to hover, you have to control

09:35   12   four degrees of movement: Up down, right left, in out,

09:35   13   spin, okay? That happens when the joystick is released

09:35   14   and it goes to the middle, and it happens

09:35   15   automatically. You don't have to go, oh, shoot. I

09:35   16   need to hover. Push a button. It just happens

09:35   17   automatically. Automatically is very important.

09:35   18   Here's the claim -- one of the claims for

09:35   19   the hover feature. Much longer, lots more elements.

09:35   20   And Dr. Michalson is going to go through this and show

09:35   21   you where each one of these things is present in the

09:35   22   DJI drones.

09:35   23   If he gets all green checks, the DJI

09:35   24   drones infringe. You might guess the evidence will

09:35   25   show that we believe the DJI drones infringe both the

09:35   1   following patent and the hovering patent.

09:35   2   So what happens? If you find and agree

09:35   3   with us that DJI has used these inventions without

09:35   4   permission, what happens? I talked about this earlier.

09:36   5   DJI has to pay compensation.

09:36   6   How much? The second expert we brought

09:36   7   with you -- to bring to you today is Jeff Andrien.

09:36   8   Mr. Andrien is a professional economist. He has

09:36   9   35 years of experience in valuing things like this, and

09:36   10 he's going to run through how you get from what DJI

09:36   11 sells to how much they owe for the infringement.

09:36   12   This is not a simple process, but it is

09:36   13 sort of logical, okay? First thing you have to do is

09:36   14 you have to imagine a meeting a long time ago with

09:36   15 Textron Innovations in one chair and DJI in the other

09:36   16 chair, and they're going to negotiate permission for

09:36   17 DJI to use the patents.

09:36   18   Did this meeting happen? No. That's why

09:36   19 we're here. If the meeting had happened, we wouldn't

09:36   20 be here. It's a hypothetical meeting, and in law it's

09:36   21 called the hypothetical negotiation.

09:36   22   So we imagine a long time ago that they

09:37   23 come to the table and they figure out how much DJI has

09:37   24 to pay for the permission, okay? So what do you do?

09:37   25 You have to decide how much value are they splitting?

09:37 1   What are the inventions worth? Are the inventions

09:37 2   worth the total revenue that DJI makes? No. Because

09:37 3   there's other stuff in drones that has nothing to do

09:37 4   with the patents, right? So it's some fraction. It's

09:37 5   some part of that.

09:37 6   If you do that, you have a pile of money

09:37 7   in the middle of the table. Now you have to decide how

09:37 8   to split it. How much does Bell Textron get? How much

09:37 9   does DJI get, okay?

09:37 10   You might think, well, Bell Textron gets

09:37 11 all of it. It should be -- they own the patent. But

09:37 12 that doesn't make sense because DJI has to leave that

09:37 13 negotiation with an incentive to do business, right?

09:37 14 If they didn't have an incentive to do -- if they

09:37 15 weren't making any money, they would just say, well,

09:37 16 I'll just go home, okay?

09:37 17   So you have to decide how much do they

09:37 18 get? How much does Bell get?

09:37 19   So you start with the total. The total

09:37 20 of infringing sales of these drones that we're talking

09:38 21 about that do hover and do follow is a little over

09:38 22 $3 billion. As I said, they're selling a lot of them

09:38 23 and they're not cheap.

09:38 24   We have to decide, though, how much of

09:38 25 that 3 billion is related to the patents, okay? Some

09:38   1   of this is easy.

09:38   2   First thing we can do is we can get rid

09:38   3   of the camera. There's a very sophisticated camera on

09:38   4   these things to take these pictures. There's also a

09:38   5   swivel device called a gimbal. You -- those don't have

09:38   6   anything to do with the features so we can take that

09:38   7   off. And you can see that's 20 percent of the value.

09:38   8   So we dropped from three -- a little over $3 billion

09:38   9   down to $2.4 billion.

09:38   10   Now we have to take from that -- we have

09:38   11   to figure out what the features are worth. Within that

09:38   12   remaining, how much is Follow Me worth and how much is

09:38   13   hover worth? And we have a way to do that.

09:38   14   DJI surveys its customers. It sends out

09:38   15   questionnaires, says what is important to you? Why did

09:38   16   you buy your drone? Why will you buy your next one?

09:38   17   And the customers answer. They say,

09:38   18   well, I like hovering. I like battery life. I like

09:39   19   lightweight. I like the quality of the camera, and

09:39   20   they rank these things.

09:39   21   Mr. Andrien was able to take those

09:39   22   responses and figure out what -- the relative value of

09:39   23   each one of these, and you see they're not the same.

09:39   24   The following feature is $53 million of

09:39   25   that remaining amount and the auto hovering is

48

09:39 1 $430 million. So customers say hovering is more

09:39 2   important than following, which makes sense, okay? So

09:39 3   Mr. Andrien is going to explain this all in detail.

09:39 4   So as I said, now we're sitting at the

09:39 5   table. We know how much value there is in the middle

09:39 6   and we have to split it up.

09:39 7   Like I said, if the bargaining power of

09:39 8   each was absolutely equal, well, you'd go 242, 242.

09:39 9   You'd do 50/50, right? But Mr. Andrien studied the

09:39 10 bargaining positions of these two companies, all right?

09:39 11   The first thing he said -- noticed is

09:40 12 Bell Textron and DJI, the evidence will show that they

09:40 13 are converging. Their markets are getting closer and

09:40 14 closer together. And we'll talk about this in detail

09:40 15 from the witness stand. That means that Bell Textron,

09:40 16 at this meeting, would see DJI as a potential

09:40 17 competitor, all right?

09:40 18   That means that the business people at

09:40 19 Bell Textron are going to say wait, wait, wait. What

09:40 20 are you doing? You're giving somebody permission to

09:40 21 compete with me? Okay. If you do that deal, you

09:40 22 better get money to compensate for my lost

09:40 23 opportunities, right? So that increases the bargaining

09:40 24 position of Bell Textron, right? That was one factor.

09:40 25   Another factor he found is a very big

49

09:40 1   one. Bell Textron's largest customer by far -- the

09:40 2   evidence will show that it's over -- about

09:40 3   60 percent -- is the U.S. government, specifically the

09:40 4   Department of Defense. Helicopters, V-20 Ospreys, all

09:40 5   these things are being sold to the armed forces of the

09:40 6   United States.

09:40 7   Why is that important? Recently the U.S.

09:41 8   government, specifically the Department of Defense,

09:41 9   released a list of companies that it deemed were

09:41 10   Chinese military companies. What it was saying to the

09:41 11   business folks in the United States was, if you do

09:41 12   business with these people, we're not going to like it

09:41 13   and you better be really careful. The Chinese military

09:41 14   could use these companies for nefarious purposes.

09:41 15   Now, what does that mean? So now your

09:41 16   business person is sitting down at this meeting and

09:41 17   he's saying, if I do the deal with DJI, I may make my

09:41 18   major customer angry at me. Will that potentially risk

09:41 19   my business with the U.S. government?

09:41 20   Once again, that doesn't necessarily mean

09:41 21   that the deal doesn't happen, but it means that Bell

09:41 22   Textron has to be incredibly careful and needs

09:41 23   compensation for that risk. So once again, the

09:41 24   bargaining position of Bell Textron is much, much

09:41 25   greater than DJI because of these problems, all right?

09:41   1   It also, by the way, just as an aside, it

09:42   2   doesn't matter at all if DJI is actually a Chinese

09:42   3   military company, right? Think about it. Your biggest

09:42   4   customer said they were. Your biggest customer, the

09:42   5   U.S. government, says we think they are. Bell Textron

09:42   6   has no way of knowing whether that's true. They have

09:42   7   no way of confirming that. They don't have the CIA.

09:42   8   They don't have the NSA. They don't have the FBI.

09:42   9   But the customer's right. If your

09:42   10   customer says this is a problem I have and you're

09:42   11   trying to sell to them, you say, okay. Your problems

09:42   12   are my problems, right?

09:42   13   So Mr. Andrien looked at these factors,

09:42   14   and he said that they would split the money 76 percent

09:42   15   to 24 percent. How did he get 24 percent?

09:42   16   24 percent is the margin that DJI makes

09:42   17   on most of its business. It's its average margin. So

09:42   18   essentially Jeff Andrien said, I know they would take

09:42   19   that because that's what they typically make. So they

09:42   20   would think that that's a great deal, okay?

09:43   21   So what does that mean?

09:43   22   That means that the reasonable royalty

09:43   23   that DJI owes to Bell Textron for trespassing on its

09:43   24   patents is $367 million and more.

09:43   25   Now --

51

09:43   1   THE COURT: Counsel.

09:43   2   MR. MEEK: Thank you, Judge.

09:43   3   That's a lot of money. I am not going to

09:43   4   tell you that that's not a lot of money, but you also

09:43   5   saw -- the evidence is going to show that just on the

09:43   6   accused products Mr. Wang and DJI make over $3 billion.

09:43   7   This is about 11 -- almost 12 percent of

09:43   8   that number. 12 percent is reasonable given the

09:43   9   bargaining positions of the parties.

09:43   10   What will DJI say in response? What are

09:43   11 they going to come and tell you?

09:43   12   Well, we're going to find out together,

09:43   13 but I think they're going to tell you that -- something

09:43   14 along the lines that the Patent Office made a couple of

09:43   15 mistakes, not one but two mistakes. They shouldn't

09:43   16 have ever issued the patents and that the patents

09:44   17 should be taken away from Bell Textron because they're

09:44   18 invalid.

09:44   19   But remember the video that you heard.

09:44   20 Because of the hard work of the Patent Office and all

09:44   21 those people that look at those patents and decide

09:44   22 whether they should be issued, there is a presumption

09:44   23 that those patents should be held valid.

09:44   24   And in order to overcome that

09:44   25 presumption, you good ladies and gentlemen have to be

09:44   1   clearly convinced that the patents are invalid. You

09:44   2   don't take property away from people in the state of

09:44   3   Texas without being clearly convinced, okay?

09:44   4   And we don't think that's a question. We

09:44   5   think the evidence will show that not only are you not

09:44   6   going to be clearly convinced, you're going to be

09:44   7   convinced that these patents are valid. These

09:44   8   inventions are real. The Patent Office did a great

09:44   9   job.

09:44   10   Finally, DJI's likely to say that

09:44   11 $367 million is just too much money. I don't know

09:44   12   exactly what the number will be, but it -- if it's --

09:44   13   if the -- they could come in with something very much

09:44   14   smaller.

09:44   15   But 11 or 12 percent on $3 billion of

09:45   16   revenue, when it effectively gives them their margin,

09:45   17   is not unreasonable. It is a reasonable royalty, and

09:45   18   it's fair.

09:45   19   Thank you so much for your time today. I

09:45   20   am looking forward to spending this week with you. You

09:45   21   are the reason this process works. I want to thank you

09:45   22   for your patience. I want to thank you in advance for

09:45   23   your attention.

09:45   24   Witnesses and evidence come in a weird

09:45   25   way. It's not a conversation. Everything that person

53

09:45   1   says all happens at one time, right? And then another

09:45   2   person gets up there. So it's not -- we can't hear

09:45   3   snippets in a coherent way.

09:45   4   What does that mean?

09:45   5   It won't all come together until I get to

09:45   6   talk to you at the end of the week in the closing. So

09:45   7   I thank you in advance for your patience and trying to

09:45   8   put that Tetris puzzle together.

09:45   9   Until then, thank you very much.

09:45   10   THE COURT: Would you like a warning at

09:46   11   any time?

09:46   12   MR. SCHROEDER: Pardon me? Oh, a

09:46   13   five-minute warning. That'd be great, Your Honor.

09:46   14   Thank you.

09:46   15   OPENING STATEMENT ON BEHALF OF THE DEFENDANT

09:46   16   MR. SCHROEDER: Good morning. My name is

09:46   17   Jacob Schroeder, and I'm honored to be here on behalf

09:46   18   of DJI this morning.

09:46   19   You have just heard a lot about Textron,

09:46   20   and I have to agree that Textron is an innovator and a

09:46   21   great company. They were founded 100 years ago as a

09:46   22   textile company in the early 1900s, and today they do

09:46   23   manufacture important products for our government and

09:46   24   our military. They turn to Textron when they need

09:46   25   helicopters. That, I do not disagree with.

54

09:46   1   But DJI is an innovator in their own

09:46   2   right. They were founded in the early 2000s. They

09:46   3   don't build helicopters. They don't build any other

09:47   4   manned vehicles.

09:47   5   Rather, DJI built the drone industry.

09:47   6   Many have tried and failed to enter the drone market

09:47   7   over the years, but nobody's products come anywhere

09:47   8   close to DJI's products. DJI is and has remained the

09:47   9   market leader with over 70 percent of the drone market

09:47   10   today.

09:47   11   And this is a timeline slide of DJI's

09:47   12   drone development. DJI was founded, as you heard, in a

09:47   13   college dorm room in 2006 by their current CEO, Frank

09:47   14   Wang. He wanted to make remote-controlled helicopters

09:47   15   easier to fly.

09:47   16   I don't know if any of you have ever

09:47   17   tried to fly a remote-controlled helicopter. I have.

09:47   18   I have an uncle who flew them when I was a kid, and I

09:47   19   tried. They're really difficult.

09:47   20   And Mr. Wang had the same issue. He flew

09:47   21   one and it crashed, and he said, there's got to be a

09:47   22   better way to do this. And so he designed a flight

09:47   23   controller that could be plugged into helicopters you

09:47   24   could buy, the helicopter kits you could buy at the

09:47   25   store, that would make them easier to fly, and he

55

09:48   1   turned a business out of that.

09:48   2   After creating a plug-and-play helicopter

09:48   3   flight controller, he created a ready-to-fly drone,

09:48   4   something that a consumer could just buy and take a

09:48   5   drone out of the box and fly it.

09:48   6   Over time, DJI continued to innovate.

09:48   7   They added a camera to their drones after they had

09:48   8   heard how users were using their products. They had

09:48   9   heard that users were taping a camera to the bottom of

09:48   10 the drone to fly around and capture pictures from the

09:48   11 air. Tape the GoPro to the bottom of a drone, set it

09:48   12 to take pictures every few seconds, and then when the

09:48   13 drone landed, the user could say, oh, cool. That's

09:48   14 really neat. I can see my house. I can see my

09:48   15 neighbor. You know, whatever they want to take a

09:48   16 picture of they could take a picture of. They could

09:48   17 see the neighborhood. They could see their streets.

09:48   18   So over time DJI innovated. They added a

09:48   19 camera to their drones, and then they innovated

09:48   20 further. They added a gimbal to keep the camera steady

09:48   21 as the drone flew. You'll hear all about this as the

09:48   22 evidence comes in.

09:48   23   And today, DJI's innovations have

09:48   24 extended far beyond these humble beginnings, and

09:48   25 they've continued to innovate to camera products that

09:49   1   you're going to see and hear about as well.

09:49   2   Now after starting this industry about

09:49   3   20 years ago -- or yeah. DJI has over 39,000 patents,

09:49   4   patent applications and patent publications around the

09:49   5   world. About 2,000 of these, you will hear, relate to

09:49   6   tracking or following an object, and around 1,600

09:49   7   relate to their drones' ability to hover in the air.

09:49   8   And this is not to say that DJI does not

09:49   9   license patents from others. DJI respects the patent

09:49   10 system. They're a player in it as well, and they

09:49   11 respect the patent rights of others. DJI has paid to

09:49   12 license patents in the past when they need to.

09:49   13   DJI's products are used in filmmaking to

09:49   14 film TV shows anywhere from Star Wars Mandalorian to

09:49   15 Yellowstone, two shows I like, to Dancing with the

09:49   16 Stars, also for movies such as The Greatest Showman to

09:49   17 the latest Avengers movie.

09:50   18   DJI's products are also used by local law

09:50   19 enforcement. Waco's Police Department uses DJI drones.

09:50   20 Temple's Police Department uses DJI drones. Belton's

09:50   21 Fire Department uses DJI's drones. Hill County EMS

09:50   22 used DJI drones to save a mother and daughter who were

09:50   23 in Lake Brazos just downstream the dam from Lake

09:50   24 Whitney to deliver life preservers to them until they

09:50   25 could be rescued.

09:50 1   The Texas Rangers, not the baseball team,

09:50 2 but the Texas Rangers that patrol the border, they fly

09:50 3 DJI's drones 24/7, and they are one of DJI's largest

09:50 4 customers.

09:50 5   They're also used by people like you and

09:50 6 me, who, like I said, just want a toy to fly and take

09:50 7 pictures from the air, see what your house looks like

09:50 8 from above, see what the streets in your neighborhood

09:50 9 look like, film you out riding your mountain bike on a

09:50 10 trail or out walking the dog or even a beautiful

09:50 11 picture taken while you're on vacation in Hawaii. This

09:50 12 is what DJI's products do, and they serve these needs

09:51 13 very well.

09:51 14   DJI's innovation has also been widely

09:51 15 recognized. DJI won an Emmy, an Emmy, in 2017 for its

09:51 16 technology and engineering advancements in filmmaking.

09:51 17   The Massachusetts Institute of

09:51 18 Technology, MIT, named DJI as one of the 50 smartest

09:51 19 companies in 2017. Fast Company named -- the magazine,

09:51 20 they named DJI the most innovative company in 2017 and

09:51 21 again in 2018.

09:51 22   And at the Consumer Electronics Show,

09:51 23 which is a huge show that takes place in January in

09:51 24 Las Vegas every year, DJI received the "Best in Show"

09:51 25 in 2019. CNET named DJI the undisputed leader in drone

09:51	1	technology and gave DJI the "Best Drone For Consumers"
09:51	2	award in 2021. And Time Magazine awarded DJI as one of
09:51	3	the most influential companies in 2021.
09:51	4	Before I continue, I'd like to pause to
09:51	5	make a few introductions.
09:51	6	I already told you my name. I'm Jacob
09:51	7	Schroeder. Y'all had to say a little bit about
09:51	8	yourselves during this process, and I'll say a little
09:52	9	bit about me too.
09:52	10	I grew up on a small farm in a town in
09:52	11	Indiana, small town. My wife and I have been together
09:52	12	for 20 years, which I just realized it's 20 years this
09:52	13	month. We celebrated earlier this month, and that's
09:52	14	half my life. I have three kids and a cat.
09:52	15	I've got with me two representatives from
09:52	16	DJI, Mr. Wayne Baker sitting with me at counsel table,
09:52	17	who I already introduced. He's a fire chief who lives
09:52	18	up in Johnson County in Cleburne, and he -- his role
09:52	19	with DJI is to help fire departments learn how they can
09:52	20	use drones to save lives. And he also led the team of
09:52	21	firefighters recently from Cleburne to the town of West
09:52	22	the night of the explosion.
09:52	23	Also with me in the courtroom is
09:52	24	Mr. Romsin Oushana. You'll hear from him later when
09:52	25	DJI gets a chance to present their witnesses. He's an

09:52 1   employee of DJI Creative Studios, which is DJI's

09:52 2   marketing company here in the United States.

09:52 3   Also, DJI will have its own experts that

09:52 4   you will hear from. You'll hear from Dr. Illah

09:52 5   Nourbakhsh professor -- he's a professor of robotics at

09:53 6   Carnegie Mellon in their school of computer science.

09:53 7   He was previously the robotics group lead

09:53 8   at NASA Ames Research Center. He received his

09:53 9   bachelor's, master's and Ph.D. in computer science from

09:53 10 Stanford University in California. He's been a

09:53 11 professor at Carnegie Mellon for over 25 years. In

09:53 12 addition to that, he's also an experienced and licensed

09:53 13 helicopter, airplane and drone pilot.

09:53 14   Also, you'll hear from our financial --

09:53 15 from a financial expert, Mr. Todd Schoettelkotte, in

09:53 16 the very back. He's a certified public accountant with

09:53 17 more than 20 years of experience as a financial

09:53 18 consultant. He's based in Houston, Texas.

09:53 19   He received his master's in accounting

09:53 20 and business administration from Rice, and he's

09:53 21 probably also the tallest gentleman in the courtroom.

09:53 22 I remember seeing him as a young boy in Indiana. I

09:53 23 used to like basketball. Mr. Schoettelkotte, I

09:53 24 remember he played for Purdue, because I remember how

09:53 25 big his name was across the back of his jersey when

09:53 1   they showed his last name. And then he went to Rice to

09:53 2   play for them. So I do remember meeting him when I was

09:54 3   a young kid.

09:54 4   So returning to the parties.

09:54 5   I already told you that Textron's a great

09:54 6   company and they are. They sell everything from

09:54 7   helicopters to golf carts and even lawnmowers, but

09:54 8   Textron has not sold a single product that uses any of

09:54 9   the patents you'll hear about this week, and Textron

09:54 10   has not sold a single drone.

09:54 11   And let me tell you a little bit about

09:54 12   the story. DJI's first encounter with Textron was when

09:54 13   it received this letter out of the blue in

09:54 14   September 2019. Textron said it decided to sell one of

09:54 15   the patents in this case. Textron did not say in this

09:54 16   letter that it thought DJI was using it, said it just

09:54 17   had decided to sell this and is reaching out to see who

09:54 18   wanted to buy it. DJI was not interested in Textron's

09:54 19   15-year-old patent.

09:54 20   The second time DJI had ever heard of

09:54 21   Textron was when it got sued, and it -- and that was in

09:54 22   2021 after Textron had attempted and failed to sell the

09:54 23   patent at issue here. Nobody in a drone industry was

09:54 24   interested and then this lawsuit came.

09:55 25   So I do want to talk briefly about the

| 09:55 | 1 | patents. You'll hear from Dr. Nourbakhsh more detail, |

09:55   1   patents. You'll hear from Dr. Nourbakhsh more detail,

09:55   2   but I want to preview some of their argument -- or some

09:55   3   of the -- some of the issues he will raise about these

09:55   4   patents.

09:55   5   On this slide here, this is the '909

09:55   6   patent you heard about, the following patent.

09:55   7   Textron's patents, if you look through them and you see

09:55   8   from Figure 1, it describes an improved system for

09:55   9   controlling the vehicle to approach a different vehicle

09:55   10 such as landing an aircraft on a moving aircraft

09:55   11 carrier.

09:55   12   And in that situation, you've got the

09:55   13 boat that's moving up and down in the waves, probably

09:55   14 cruising along, and you want to land a different

09:55   15 aircraft on it autonomously, and so you want to control

09:55   16 it.

09:55   17   And what the patent describes is -- to

09:55   18 try to solve this problem they said, well, people have

09:55   19 tried to have vehicles follow other vehicles such as in

09:55   20 a -- cruise control on an automobile, and in those

09:55   21 systems the following vehicle is following what's

09:55   22 called the reference vehicle simply by receiving

09:55   23 position information.

09:56   24   Now, my car is not that sophisticated,

09:56   25 but I've driven my parents' car and it has this thing

09:56   1   called "adaptive cruise control." I don't know if any

09:56   2   of your vehicles have it, but if you set that at 65 and

09:56   3   you come up on someone else, it keeps a distance from

09:56   4   them if they're going slower than you, and it does that

09:56   5   because it senses the position only and it stays back a

09:56   6   little bit behind them.

09:56   7   The patent describes that that's not good

09:56   8   enough if you're trying to land a vehicle on another

09:56   9   moving vehicle. If you're trying to control the speed

09:56   10 of one vehicle with reference to another, you not only

09:56   11 need the position information, you need movement data

09:56   12 as well. And so you'll hear about that.

09:56   13   And let me -- so this is a requirement of

09:56   14 every claim, and Dr. Nourbakhsh will explain that. The

09:56   15 patent describes tracking position and movement of the

09:56   16 reference vehicle. That's important.

09:56   17   DJI's products do not do that. DJI's

09:56   18 products follow an object based only on its position.

09:56   19 We're not talking about landing a drone on a moving

09:57   20 aircraft carrier. We're talking about flying behind a

09:57   21 skier on the slopes or a hiker out there with his three

09:57   22 dogs on the trail. Tracking position -- tracking and

09:57   23 following by position only is more than sufficient for

09:57   24 the way DJI's products are used. This isn't military

09:57   25 technology. DJI's products use position-based control.

09:57 1   You will hear that and other reasons from

09:57 2   Dr. Nourbakhsh when he gets a chance to provide his

09:57 3   testimony in this case.

09:57 4   Now, as to the '752 patent, which is the

09:57 5   second of the patents today, Textron's patent describes

09:57 6   solutions to problems encountered with a very specific

09:57 7   type of aircraft which are manned helicopters. One

09:57 8   problem the patent describes is this thing called

09:57 9   brownout. This is turbulence caused by rotors that can

09:57 10 kick up a dust storm making it really hard for the

09:57 11 pilot to know what's going on outside of the

09:57 12 helicopter, where he's at, how to land.

09:57 13   I remember when I was a kid I saw this

09:57 14 movie, Jurassic Park, the first one. At the very

09:57 15 beginning there's this scene where the archeologists

09:57 16 are sweeping the dust off the bones, and then the

09:58 17 wealthy guy comes in this helicopter and dust is

09:58 18 blowing all over. That's what brownout is, except even

09:58 19 more extreme, where you can't see -- the pilot can't

09:58 20 see where he's at and he gets disoriented.

09:58 21   Another problem the patent describes is

09:58 22 that of pilot fatigue. And so this is if the pilot's

09:58 23 cruising along at a fast speed and -- so he doesn't

09:58 24 have to focus on holding that stick steady and at the

09:58 25 right angle. He can release the stick, and it's got --

09:58   1   and once it's going over a certain speed, if he

09:58   2   releases the stick, it'll hold the forward speed. It's

09:58   3   cruise control.

09:58   4   Now, DJI doesn't need that. They don't

09:58   5   need that kind of functionality. DJI's drones don't

09:58   6   suffer the same problems of pilot disorientation or

09:58   7   fatigue for at least three reasons.

09:58   8   First, DJI's drones don't have onboard

09:58   9   controls. The drone -- there's no one sitting on the

09:58   10   little drone. DJI's drones are all unmanned. So

09:58   11   there's no issue of pilot disorientation.

09:58   12   There's not a pilot sitting in a cockpit

09:58   13   who can't see out the windshield because there's too

09:58   14   much dust. When you operate these products, you're

09:59   15   always supposed to be in line of sight, but you're

09:59   16   outside the drone using a remote controller, not a

09:59   17   controller on the drone.

09:59   18   And finally, number three, DJI's drones

09:59   19   do not have the claimed cruise control, rather, when

09:59   20   you release DJI's stick on the controller, the remote

09:59   21   controller, it slows to a stop and then holds its

09:59   22   position. This functionality in DJI's drones, just

09:59   23   like that accused of -- with respect to the '909 patent

09:59   24   is controlled using the drone's position and not the

09:59   25   drone's speed.

09:59   1   You will hear this and other reasons from

09:59   2   Dr. Nourbakhsh as well.

09:59   3   Now I'd like to take a moment to address

09:59   4   Textron's damages request in this case. After hearing

09:59   5   the evidence I think you'll agree that 367 million is

09:59   6   an outrageously large slice of a pie that Textron never

09:59   7   even helped to make.

09:59   8   And at the end of the trial, I'm going to

09:59   9   ask you to award zero dollars. Not a single penny.

09:59   10   And there's three very important reasons why.

10:00   11   First, the evidence will show that DJI's

10:00   12   an innovator in its own right. DJI worked hard to

10:00   13   develop and build its drone technology without any help

10:00   14   from Textron. DJI worked for nearly two decades on

10:00   15   this, starting from one college kid in a dorm room and

10:00   16   growing to the global company it is today.

10:00   17   DJI does not need nor use any of the

10:00   18   inventions Textron claims in its patents, and this is

10:00   19   why DJI is the market leader in the drone market, and

10:00   20   Textron is not even a competitor of it.

10:00   21   Number two, Textron is doing a lot of

10:00   22   stretching in this case. Stretching the claims to

10:00   23   cover DJI's technology and stretching the value of that

10:00   24   technology as well. And you'll hear from

10:00   25   Mr. Schoettelkotte on that, our damages expert.

10:00   1   But you do not need an expert to tell you

10:00   2   what everyday common sense tells you about value. As

10:00   3   you hear the evidence I want you to think about these

10:00   4   questions: How can technology that Textron did not

10:00   5   use, that they tried to sell and failed, that nobody

10:00   6   wanted, how is that worth $367 million?

10:01   7   How can technology that Textron says it

10:01   8   invented 12 to 19 years ago be relevant and valuable to

10:01   9   a high-tech market like the drone industry, an industry

10:01   10   where new technology becomes old in the blink of an eye

10:01   11   and competitors struggle to keep up and cutting edge

10:01   12   technology is everything? How can those dated patents

10:01   13   be worth 367 million?

10:01   14   And as you hear the evidence I also want

10:01   15   you to ask: What's the real reason why Textron is here

10:01   16   asking for 367 million? Nothing in the real world

10:01   17   supports that number.

10:01   18   Third, the evidence will show that the

10:01   19   technology doesn't even belong to Textron. You're

10:01   20   probably thinking, well, Mr. Schroeder, what are you

10:01   21   talking about? They have a patent. That's why we're

10:01   22   here. Patents are supposed to give an inventor rights

10:01   23   to technology.

10:01   24   But here's the thing about our patent

10:01   25   system. The United States government -- the United

10:01   1   States -- this country has the best patent system in

10:01   2   the world. I agree, innovation is woven into our

10:01   3   American DNA. It is so important it is written into

10:02   4   the Constitution, and while it's not perfect, it's

10:02   5   pretty smart.

10:02   6   And the way it works is you're allowed to

10:02   7   get a patent for the new things that you actually

10:02   8   invent, but if it turns out that someone else made it

10:02   9   first or if what you did is obvious based on what

10:02   10 others had done before you, you don't get to keep your

10:02   11 patent claims. You don't get to claim ownership for

10:02   12 something that somebody else already did that already

10:02   13 belongs to the public.

10:02   14   And that makes sense because patents are

10:02   15 powerful things. A patentholder's given a monopoly for

10:02   16 20 years. By giving a patentee, someone who owns a

10:02   17 patent, a monopoly for something that belongs to the

10:02   18 public, it undermines the whole system because the

10:02   19 inventor then, the purported inventor, is giving

10:02   20 something but given nothing in return.

10:02   21   DJI did not ask to be here today. And

10:02   22 I'm pretty sure DJI would have at least appreciated a

10:02   23 knock on the door, a phone call or even a letter from

10:02   24 Textron saying, hey, DJI, we think you infringe our

10:02   25 patents. Can we talk about that?

68

10:03   1   The letter didn't say that. Textron

10:03   2   chose not to do that and decided to go straight to a

10:03   3   lawsuit, and that's fine. That is their right. That's

10:03   4   what we can do in America.

10:03   5   But Textron is a highly sophisticated

10:03   6   company. They have lots of intellectual property, as

10:03   7   you heard. They have lots of skilled lawyers, and this

10:03   8   is how the process works, and they know that.

10:03   9   When you file a patent infringement

10:03   10   lawsuit and claim that somebody else is infringing your

10:03   11   patent claims, you're taking a risk. When you do that,

10:03   12   you're opening up those claims to scrutiny, and

10:03   13   depending on what is discovered during that process,

10:03   14   there's a risk that these patents -- that those patent

10:03   15   claims can be taken away.

10:03   16   I've heard one client describe it to me,

10:03   17   it's when you take the toys out of the toy box,

10:03   18   sometimes a toy gets broken. So when this suit was

10:03   19   filed, that's exactly what happened. Textron's claims

10:03   20   were scrutinized.

10:03   21   And guess what we discovered? It turns

10:03   22   out for the technology that Textron says it invented in

10:03   23   the '909 patent, it was actually invented by somebody

10:03   24   else first, and that inventor is named Bentley Frink.

10:03   25   Frink filed a patent -- Mr. Frink filed a patent

10:04   1   monitoring position and movement of a tracked vehicle

10:04   2   so that an aircraft can approach that vehicle.

10:04   3   And you'll hear more about that from

10:04   4   Dr. Nourbakhsh when we get a chance to present that

10:04   5   evidence.

10:04   6   And it turns out that the technology

10:04   7   Textron says it invented in Claim 13 of the '752

10:04   8   patent, it was obvious based on an article written by a

10:04   9   Boeing engineer describing Boeing's helicopters years

10:04   10 before Textron's patents. Now, Boeing is one of

10:04   11 Textron's competitors in the helicopter industry.

10:04   12   It also turns out that the Patent Office

10:04   13 had neither of these critical pieces of information,

10:04   14 Frink or the Boeing article. Frink, being Mr. Frink's

10:04   15 patent -- in the patent world we usually refer to the

10:04   16 patents by just the last name. So I do not intend to

10:04   17 be informal, but it was Mr. Frink's patent or the

10:04   18 helicopter article written by the Boeing engineer.

10:04   19   The Patent Office didn't have that.

10:04   20 We're not going to argue that they made a mistake.

10:04   21 We're just going to say they didn't have a complete

10:04   22 picture, and so that's where you, the jury, come in.

10:04   23 The patent system in this country was designed

10:04   24 specifically so that you, the jury, can serve this

10:05   25 critical function. You, the jurors, provide the check

70

10:05   1   and balance to the Patent Office. You have the last

10:05   2   word in this patent system that we have, not the Patent

10:05   3   Office.

10:05   4   And why is this important? I agree --

10:05   5   you heard in the patent jury video that this is

10:05   6   precisely when you get to come in which is when the

10:05   7   Patent Office does not have all the information. It's

10:05   8   making decisions based on an incomplete picture.

10:05   9   And as you heard in the patent jury video

10:05   10 and the preliminary instructions that you were read

10:05   11 last Thursday, that is precisely when you get to decide

10:05   12 if that missing information would have made a

10:05   13 difference.

10:05   14   So in this trial, because Textron put at

10:05   15 issue these patents and because we have information the

10:05   16 Patent Office has never considered, you, the jury, must

10:05   17 decide whether Textron's claimed inventions truly

10:05   18 belong to Textron or whether they belong to you and the

10:05   19 rest of the public.

10:05   20   At the end of this trial I'm going to

10:05   21 respectfully ask three things of you. We're going to

10:05   22 ask you, one, to conclude that what DJI does is

10:06   23 different and, therefore, DJI does not infringe; two,

10:06   24 we're going to ask you to award Textron nothing in

10:06   25 damages; and, three, we're going to ask you to

10:06   1   invalidate some of the patent claims in Textron's

10:06   2   patents that do not rightfully belong to Textron.

10:06   3   Now, there's one last thing I wanted to

10:06   4   address with you before I sit down. And as you've

10:06   5   already heard, the defendants in this case are Chinese

10:06   6   companies. And let's be honest. We've heard lots of

10:06   7   things in the press in the past few years about China

10:06   8   and the Chinese government, and virtually none of it is

10:06   9   positive and it seems almost relentless.

10:06   10   And as we stand here in this courtroom,

10:06   11   we're all mindful of this reality. I mention this

10:06   12   because you may hear and have heard and you will

10:06   13   probably see a document that Textron wants to show you

10:06   14   in this case in which DJI is referred to as a "Chinese

10:06   15   military company."

10:06   16   The events will show that while DJI makes

10:06   17   drone technology designed for many things, military

10:06   18   uses are not one of them. And even though DJI strongly

10:07   19   disagrees with the characterization of it as a Chinese

10:07   20   military company, the document nonetheless exists.

10:07   21   So if you see this document presented by

10:07   22   Textron, ask yourselves whether this document truly has

10:07   23   any relevance to this case that you are all here to

10:07   24   decide.

10:07   25   I'll say the same thing about our justice

72

10:07	1	system that I did our patent system. It's not perfect,
10:07	2	but it is the best in the world. In many places in
10:07	3	this world, you -- if you're accused of a wrongdoing,
10:07	4	you will not even get a trial. And in those places --
10:07	5	in other places where you do get a trial, you have no
10:07	6	hope of getting a fair one.
10:07	7	But in this country you can count on
10:07	8	getting a fair trial. The notion of fairness and
10:07	9	justice for all is woven into the American DNA. It is
10:07	10	who we are.
10:07	11	And I'm confident that you will listen to
10:07	12	the evidence carefully and give DJI a fair trial,
10:07	13	whatever the outcome. And DJI has this confidence in
10:07	14	you as well.
10:07	15	And with that, I thank you for your
10:07	16	patience and your time this morning.
10:07	17	THE COURT: Thank you, sir.
10:08	18	Mr. Meek, do you have a witness to call?
10:08	19	MR. MEEK: Yes, sir. Textron Innovations
10:08	20	calls Mr. James Runstadler.
10:08	21	(The witness was sworn.)
10:08	22	THE COURT: Counsel, if you'll give me a
10:08	23	second.
10:08	24	Ladies and gentlemen of the jury, just so
10:08	25	you know how I run my court, I typically take a short

73

10:08 1 recess in the morning and a short recess in the

10:08 2 afternoon.

10:08 3   We'll get started with this witness, but

10:08 4 at some point we'll take that short recess and then

10:08 5 we'll continue until lunch.

10:08 6   Counsel?

10:08 7   MR. MEEK: Your Honor, permission to

10:09 8 approach the witness?

10:09 9   THE COURT: Sure.

10:09 10   DIRECT EXAMINATION

10:09 11 BY MR. MEEK:

10:09 12   Q.   Sir, could you please introduce yourself to

10:09 13 the jury?

10:09 14   A.   Yes. Good morning. My name is James

10:09 15 Runstadler.

10:09 16   Q.   Mr. Runstadler, I've just handed you a couple

10:09 17 of documents.

10:09 18   Can you tell the jury what they are?

10:09 19   A.   Yes. These are certified copies from the

10:09 20 Patent Office of the two patents in this case.

10:09 21   Q.   And then the notebook, is that just the other

10:09 22 exhibits that we're going to do?

10:09 23   A.   That's correct. These are exhibits.

10:09 24   MR. MEEK: So, ladies and gentlemen,

10:09 25 instead of having to run back and forth, this is what

74

10:09   1   we'll do. We'll have the witness have the notebook

10:09   2   with all the exhibits, and so I -- I will save some

10:09   3   soles on my shoes.

        4   BY MR. MEEK:

10:09   5   Q.   Where do you live, Mr. Runstadler?

10:09   6   A.   I live in East Greenwich, Rhode Island.

10:09   7   Q.   Can you tell the jury a little bit about your

10:09   8   educational background?

10:09   9   A.   Sure. I have a bachelor of arts and bachelor

10:09 10   of engineering degree from Dartmouth College. I have a

10:10 11   master's degree in mechanical engineering from

10:10 12   Rensselaer Polytechnic Institute, and I have a master's

10:10 13   in business administration from Boston University.

10:10 14   Q.   Can you tell us a little bit about your work

10:10 15   history after school?

10:10 16   A.   Yes. After I graduated from school, I started

10:10 17   out at Textron Lycoming as an engineer. Textron

       18   Lycoming is one of the companies under the Textron

       19   umbrella.

10:10 20   In my now almost 35 years with Textron, I've

10:10 21   had roles in addition to engineering, roles in

10:10 22   environmental, roles in business development, roles in

10:10 23   supply chain and for the past 20 years or so

10:10 24   intellectual property.

10:10 25   Q.   What is your current title?

10:10 1   A.   My title is president of Textron Innovations

10:10 2   and executive director of intellectual property.

10:10 3   Q.   So for Textron Innovations, you're president.

10:10 4   What is your role -- what -- what is your

10:10 5   duties in that role?

10:10 6   A.   That's managing Textron Innovations, which is

10:10 7   the intellectual property management company of

10:10 8   Textron.

10:10 9   Q.   And what is your -- what are your duties as

10:11 10   the executive director of intellectual property?

10:11 11   A.   As executive director, it's managing the

10:11 12   intellectual property function across the whole Textron

10:11 13   family of companies.

10:11 14   Q.   We've been throwing around the term

10:11 15   "intellectual property."

10:11 16   Can you help us and give us a definition of

10:11 17   that?

10:11 18   A.   Yeah. Intellectual property is what I call

10:11 19   creations of the mind and how you protect them. So an

10:11 20   example is: An engineer comes up with an invention, we

10:11 21   protect that with patents and trade secrets. The

10:11 22   marketing team comes up with a new brand, we protect

10:11 23   that with trademarks. The technical publications group

10:11 24   at Bell drafts an operating manual for the helicopter,

10:11 25   we protect that with copyrights.

10:11 1   So those creations and copyrights, trade

10:11 2   secrets, patents, trademarks, that's what we call

10:11 3   intellectual property.

10:11 4   Q.   Is intellectual property important to Textron?

10:11 5   A.   Intellectual property is really at the heart

10:11 6   of Textron. Textron has a wide variety of businesses,

10:12 7   but they have one thing in common. In each business,

10:12 8   they are the technology leader in their respective

10:12 9   industry.

10:12 10   Textron invests over $600 million every year

10:12 11   in R&D to maintain that technology leadership. Without

10:12 12   intellectual property, that development that we spend

10:12 13 $600 million a year would be free for taking by our

10:12 14   competition. We would lose our edge in the business.

10:12 15   Without intellectual property protection for

10:12 16   Textron, Textron would not be the company it is today.

10:12 17   Q.   What do you think consumers think about the

10:12 18   Bell mark and the Textron mark?

10:12 19   A.   When I think of Bell, I think of innovation.

10:12 20   I think of an aerospace leader. I think of really cool

10:12 21   products.

10:12 22   Q.   Can you tell the jury why we're in court

10:12 23   today?

10:12 24   A.   Yes. My job and Textron Innovations' job is

10:12 25   to ensure that our investments in R&D and our hard work

10:13	1	of our engineering teams is protected.
10:13	2	The technology at issue here is the outcome of
10:13	3	Textron's R&D and hard work of its engineers. The
10:13	4	technology is protected by our patents.
10:13	5	DJI is using those patents. DJI is using our
10:13	6	property. DJI is using our property without our
10:13	7	permission. DJI is using our property without
10:13	8	compensation.
10:13	9	The reason we are here today is that DJI
10:13	10	should not be allowed to continue to use our property
10:13	11	for free.
10:13	12	Q. Do you have any slides that you prepared to
10:13	13	help tell your story to the jury?
10:13	14	A. Yes. There's one slide.
10:13	15	MR. MEEK: Can we have that,
10:13	16	Mr. Patterson?
10:13	17	BY MR. MEEK:
10:14	18	Q. What does this -- what does this slide show?
10:14	19	A. This is a sampling of a wide variety of
10:14	20	Textron businesses.
10:14	21	Q. Can you describe them?
10:14	22	A. Yeah. Let's start up in the upper left
10:14	23	corner. That's a camshaft of CWC Textron, which is
10:14	24	part of our automotive business. The next one down is
10:14	25	a drone ship made by Textron systems. The next one

10:14   1   down is a King Air -- a Beechcraft King Air aircraft

10:14   2   from Textron Aviation.

10:14   3   The helicopter is a Bell 505 from Bell

10:14   4   Textron, and the bottom one is a golf cart, RXV model

10:14   5   golf cart, with E-Z-GO Textron.

10:14   6   Q.   How large is Textron?

10:14   7   A.   This year Textron's revenue will be on the

10:14   8   order of $13 billion. That puts us, in round numbers,

10:14   9   300 or so in the Fortune 500.

10:14   10   Q.   Why does Textron have golf carts and camshafts

10:14   11 and helicopters? Why so diverse?

10:15   12   A.   That goes back to our founder, Roy Little, who

10:15   13 founded Textron in 1923. So this is our 100-year

10:15   14 anniversary. Roy Little was in the textile business,

10:15   15 hence the name "text" in Textron. It comes from

10:15   16 textiles.

10:15   17   Mr. Little had a problem. Back then -- I

10:15   18 don't know if it's true today, but then the textile

10:15   19 business was very cyclical. It would be a boom for a

10:15   20 couple years, then a bust for a couple years, then boom

10:15   21 for a couple years and bust for a couple of years. It

10:15   22 was very hard to manage a business that way.

10:15   23   So he came up with the idea that says, what if

10:15   24 I bought different businesses and maybe when textiles

10:15   25 is down, this other business will be up in a totally

| 10:15 | 1 | unrelated industry? |

10:15   2   So he started buying a bunch of different

10:15   3   companies, and Textron became the first conglomerate,

10:15   4   made up of a whole bunch of different companies, and we

10:15   5   still are today. Although we sold our last textile

10:15   6   business in 1968, we still have the "text" in Textron

10:15   7   in our name.

10:15   8   Q.   What is Textron's largest business sector?

10:15   9   A.   The aerospace sector.

10:16   10   Q.   Can you tell us what aerospace is? That's

10:16   11   a --

10:16   12   A.   Aerospace is --

10:16   13   Q.   -- high-tech word.

10:16   14   A.   -- things that fly, right? It's helicopters.

10:16   15   It's drones. It's aircraft. It's tilt-rotor aircraft.

10:16   16   Things that fly, I call aerospace.

10:16   17   Q.   In the aerospace sector, who is Textron's

10:16   18   biggest customer?

10:16   19   A.   The U.S. government.

10:16   20   Q.   Do you recognize -- please turn in your

10:16   21   notebook, Plaintiff's Exhibit 377.

10:16   22   A.   Yes.

10:16   23   Q.   Do you have the document?

10:16   24   A.   Yep.

10:16   25   Q.   And what is this document?

80

10:16   1   A.   This is the Form 10-K that Textron files with

10:16   2   the U.S. Securities and Exchange Commission.

10:16   3   MR. MEEK: Your Honor, we move to admit

10:16   4   Plaintiff's 377.

10:16   5   THE COURT: Admitted.

10:16   6   MR. MEEK: Thank you, Your Honor.

10:16   7   BY MR. MEEK:

10:16   8   Q.   I believe on Page 3 of that document, does it

10:16   9   say anything about how much business Textron does with

10:16   10 the U.S. government?

10:16   11   A.   Yes. You can see it on that -- that second

10:16   12 pie chart, shows that in 2020 the revenue was --

10:17   13 30 percent was U.S. government as the customer.

10:17   14   Q.   Now, how is Textron Innovations connected to

10:17   15 Textron Incorporated?

10:17   16   A.   Textron Innovations is a subsidiary of Textron

10:17   17 Incorporated.

10:17   18   Q.   And the other companies you mentioned, Bell

10:17   19 and services and the automotive thing, how are they

10:17   20 related to Textron Innovations?

10:17   21   A.   So those companies are all also subsidiaries

10:17   22 of Textron Inc., and so they're affiliated companies of

10:17   23 Textron Innovations.

10:17   24   Q.   Why is Textron Innovations charged with

10:17   25 managing the intellectual property of the entire group

10:17	1	of companies?
10:17	2	A. That goes back to the formation of Textron
10:17	3	Innovations back a little more than 20 years ago. At
10:17	4	that time, it was the strategic decision that since
10:17	5	intellectual property was so vital to Textron's
10:18	6	businesses, the decision was made to make sure that it
10:18	7	was done properly, make sure it was done right, and so
10:18	8	we decided to centralize the function of intellectual
10:18	9	property.
10:18	10	Textron has over 80 locations around the
10:18	11	world. It'd be very hard to manage intellectual
10:18	12	property if each one of those locations was doing their
10:18	13	own thing with intellectual property.
10:18	14	So we centralize the function, make sure that
10:18	15	we do it properly, make sure that we have the right
10:18	16	tools, processes, procedures, best practices for
10:18	17	managing intellectual property and doing it well. It's
10:18	18	a hard thing to do.
10:18	19	And we replicate those across all of our
10:18	20	operations to make sure that we do it properly because
10:18	21	it's so important to the business.
10:18	22	Q. Is it common for Textron and its affiliated
10:18	23	companies to develop a technology well ahead of a
10:18	24	commercial market?
10:18	25	A. Oh, it happens all the time. We can't wait

10:18 1   for our customer to say, hey, I'd like a product that

10:18 2   does this. And we come back to you in a long period

10:18 3   down the road and say, here it is. Particularly in the

10:18 4   aerospace center -- aerospace sector, development can

10:18 5   be years, even decades.

10:19 6   Q.   Is the tilt-rotor an example of a development

10:19 7   that took a long time before it was commercialized?

10:19 8   A.   Yeah. The tilt-rotor is a good example.

10:19 9   That's the one that took quite some time.

10:19 10   MR. MEEK: Your Honor, permission to

10:19 11   approach the witness?

10:19 12   BY MR. MEEK:

10:19 13   Q.   Mr. Runstadler, can you tell the jury what I

10:19 14   just handed you?

10:19 15   A.   Yes. This is the Bell Eagle Eye, a drone

10:19 16   tilt-rotor.

10:19 17   Q.   No, it's not. It's a -- the Bell Eagle Eye's

10:19 18   15-feet long.

10:19 19   (Laughter.)

10:19 20   A.   That's right. This is -- this is a model of

10:19 21   the tilt-rotor. The actual one would be, yes,

10:19 22   considerably bigger.

10:19 23   BY MR. MEEK:

10:19 24   Q.   Can you use that model to explain what a

10:19 25   tilt-rotor does?

10:19   1   A.   Yeah. So a tilt-rotor, it's -- I call it a

10:19   2   combination between a helicopter and an aircraft. So

10:19   3   if you want to take off and land, you can -- the rotors

10:19   4   rotate up. It can go up and down vertically just like

10:20   5   a helicopter, and then in flight, the rotors rotate

10:20   6   forward and it flies like an aircraft.

10:20   7   The advantage of that is that you can take off

10:20   8   and land anywhere. You don't need a long runway to do

10:20   9   that. So that's a great advantage for being able to

10:20   10   access anywhere you want to go.

10:20   11   But in flight, it flies like an aircraft.

10:20   12   Aircraft are much more efficient in flight than

10:20   13   helicopters. So you can get longer range. You get

10:20   14   higher speed in flights.

10:20   15   You have benefits of both worlds. I can take

10:20   16   off and land anywhere, but I can get where I want to go

10:20   17   in a hurry and I can go further.

10:20   18   Q.   Which Textron subsidiary developed the

10:20   19   tilt-rotor?

10:20   20   A.   That would be Bell.

10:20   21   Q.   Can you describe the -- the -- this time

10:20   22   development cycle and how it was eventually

10:20   23   commercialized, the tilt-rotor, into products?

10:20   24   A.   Yes. So Bell started development of the

10:20   25   tilt-rotor in the mid '50s. It wasn't until the 1990s

10:20	1	that the tilt-rotor became operational with its first
10:20	2	sale to the U.S. Marines. So that was a decade-long
10:21	3	development cycle that Textron put in billions of
10:21	4	dollars of R&D to develop that technology that finally
10:21	5	ended in a product with the Marines years -- decades
10:21	6	later.
10:21	7	And today that product is sold to the U.S.
10:21	8	Navy. It's sold to the U.S. Air Force. It's sold to
10:21	9	the U.S. Marines, and it's sold to some foreign
10:21	10	countries as well.
10:21	11	Q. Bell Textron had developed the tilt-rotor
10:21	12	technology, but for a long period of time how much
10:21	13	revenue did it have from that technology?
10:21	14	A. Yeah. All during that development cycle there
10:21	15	was no sales. The first sale wasn't until the 1990s.
10:21	16	Q. Is that common with Bell's business?
10:21	17	A. Yeah. So that's common in the aerospace
10:21	18	industry. Bell is at the leading edge of technology.
10:21	19	I mean, there's a reason why the only operational
10:21	20	tilt-rotor in the world is the Bell product. The
10:21	21	technology, the development cycle, is so long.
10:21	22	Q. Who is Bell's largest customer?
10:21	23	A. Bell's largest customer is the U.S.
10:21	24	government.
10:21	25	Q. And we talked about Textron having about a

85

10:22   1   30 percent share -- 30 percent of Textron's business is

10:22   2   the U.S. government. Is Bell's percentage larger or

10:22   3   smaller than that?

10:22   4   A.   Bell's share with the U.S. government is about

10:22   5   60 percent of its revenue.

10:22   6   Q.   So more than half of its revenue is from the

10:22   7   U.S. government?

10:22   8   A.   Yes. That's correct.

10:22   9   Q.   In your role as president of Textron

10:22 10   Innovations, are you generally familiar with what a

10:22 11   patent is?

10:22 12   A.   Yes. I am.

10:22 13   Q.   I think you mentioned earlier that this is a

10:22 14   patent case. Can you explain to the jury a little more

10:22 15   about what that means?

10:22 16   A.   Yes. This is a patent case where we have

10:22 17   obtained patents that protect our technology, and we

10:22 18   are suing DJI because they are using our patents.

10:22 19   Q.   How many patents are being asserted in this

10:22 20   case?

10:22 21   A.   There are two patents at issue.

10:22 22   Q.   Are you familiar with those two patents?

10:22 23   A.   Yes. At a high level, I am, yes.

10:22 24   Q.   Now, it's not in your binder, but I think --

10:23 25   Let me...

10:23   1   Can you take a look at Joint Exhibit 2?

10:23   2   A.   Yes.

10:23   3   Q.   And what is that?

10:23   4   A.   This is a certified copy of patent 8,014,909

10:23   5   from the U.S. Patent Office.

10:23   6   Q.   Okay. Can you hold it up?

10:23   7   MR. MEEK: You all have a copy.

10:23   8   BY MR. MEEK:

10:23   9   Q.   This is -- what did -- you say it's certified.

10:23 10   What does that mean?

10:23 11   A.   It's an official copy from the U.S. Patent

10:23 12   Office.

10:23 13   Q.   Okay. So we're going to refer to that as the

10:23 14   '909 patent. 909 are the last three numbers of the

10:23 15   patent. Is that okay with you?

10:23 16   A.   Yes.

10:23 17   Q.   Okay. And was this patent developed based on

10:23 18   work and concepts from Bell?

10:23 19   A.   Yes. This patent was developed as part of R&D

10:23 20   under the Bell Eagle Eye program.

10:23 21   MR. MEEK: Your Honor, plaintiffs move to

10:23 22   admit Joint Exhibit 2.

10:23 23   MR. SCHROEDER: No objection.

10:23 24   MR. MEEK: Thank you.

10:23 25   THE COURT: Admitted.

10:23   1   BY MR. MEEK:

10:24   2   Q.   Can you look at PTX-335 in your binder?

10:24   3   A.   Yes.

10:24   4   Q.   What is that? You got it?

10:24   5   A.   Yes.

10:24   6   Q.   Okay.

10:24   7   A.   So this is a record of assignment of the '909

10:24   8   patent from the U.S. Patent Office.

10:24   9   Q.   Did I say 335 -- 335, right? I think I may

10:24   10 have misspoke. Okay.

10:24   11   Is it 335?

10:24   12   A.   335, yes.

10:24   13   Q.   Okay. And what is this? You say it's record

10:24   14 of assignment. What does that mean?

10:24   15   A.   This shows record of assignment from --

10:24   16 starting from the Bell inventors to Textron

10:24   17 Innovations.

10:24   18   Q.   Okay.

10:24   19   MR. MEEK: Your Honor, plaintiff moves to

10:24   20 admit PTX-335.

10:24   21   MR. SCHROEDER: No objection.

10:24   22   THE COURT: Admitted.

10:24   23 BY MR. MEEK:

10:24   24   Q.   And specifically, what does this say about the

10:24   25 various owners of the '909 patent?

88

10:24   1   A.   It says that Textron Innovations is the

10:24   2   current owner of the patent.

10:24   3   Q.   Has Textron Innovations been continuously the

10:25   4   owner of that patent since the date of assignment to

10:25   5   it?

10:25   6   A.   Yes.

10:25   7   Q.   Okay. And at a high level, do you know what

10:25   8   the technology of the '909 patent relates to?

10:25   9   A.   Yes. At a high level -- and again, the

10:25   10 inventors will be here later testifying. He can

10:25   11 describe it much better than I can, but at a high

10:25   12 level, it's what I call the Follow-Me patent, allows

10:25   13 the drone to follow a target.

10:25   14   Q.   Let's go to Joint Exhibit -- excuse me --

10:25   15 Joint Exhibit 8.

10:25   16   Do you recognize that?

10:25   17   A.   Yes. This is a certified copy from the U.S.

10:25   18 Patent Office of patent 9,162,752.

10:25   19   Q.   And once again, is it okay if we refer to that

10:25   20 by 752, the last three numbers? So that's the '752

10:25   21 patent?

10:25   22   A.   Yes.

10:25   23   Q.   And was this patent based on concepts

10:25   24 conceived and developed at Bell?

10:25   25   A.   Yes. It was.

10:25   1   MR. MEEK: Your Honor, I'd like to move

10:26   2   to admit Joint Exhibit 8.

10:26   3   MR. SCHROEDER: No objection.

10:26   4   THE COURT: Admitted.

10:26   5   MR. MEEK: Thank you.

10:26   6   BY MR. MEEK:

10:26   7   Q.   And let's go to Plaintiff's Exhibit 338. 338.

10:26   8   Are you there?

10:26   9   A.   Yes.

10:26   10   Q.   What is that?

10:26   11   A.   This is a record of assignment from the Patent

10:26   12 Office of assignment of the '752 patent to Textron

        13 Innovations Inc.

10:26   14   MR. MEEK: Your Honor, we move to admit

10:26   15 Plaintiff's Exhibit 338.

10:26   16   MR. SCHROEDER: No objection, Your Honor.

10:26   17   THE COURT: Admitted.

10:26   18 BY MR. MEEK:

10:26   19   Q.   And what does that assignment say related to

10:26   20 the '752 patent?

10:26   21   A.   This says that Textron Innovations Inc. is the

10:26   22 current owner of the '752 patent.

10:26   23   Q.   Does it document the assignment from the

10:26   24 inventors to Bell then to Textron Innovations?

10:26   25   A.   Yes. It does.

10:26   1   Q.   And has Textron Innovations owned that patent

10:26   2   continuously since it was assigned to it?

10:26   3   A.   Yes.   It has.

10:26   4   Q.   And do you know at a high level what the

10:26   5   technology of the '752 patent covers?

10:26   6   A.   Yes.   As with the other patent, the inventor

10:26   7   will be here to describe it in more detail than I can,

10:27   8   but I call it the hover patent.   And what it does, it

10:27   9   automatically puts the drone into hover mode.

10:27   10   Q.   And at a high level can you tell -- can you

10:27   11   describe how Bell developed these two technologies, the

10:27   12   '909 and the '752 patent?

10:27   13   A.   This is coming out of our R&D efforts.   Like I

10:27   14   said, the '909 was developed under the Eagle Eye

10:27   15   program.   The '752 was developed in other R&D efforts,

10:27   16   but it comes out of Bell Textron's engineers.

10:27   17   Q.   Do you know if Bell has any current products

10:27   18   that are -- that use these patents?

10:27   19   A.   Bell does a lot of R&D, and there will be a

10:27   20   Bell engineer who will be describing what they do in

10:27   21   more detail.

10:27   22   My understanding is Bell has not sold a

10:27   23   project -- an aircraft yet that practices these

10:27   24   patents, but it is in development.

10:27   25   Q.   So if there's no revenue yet, how is there any

10:27   1   value in the R&D that's reflected in these two patents?

10:27   2   A.   Well, a good example is as we talked about

10:27   3   earlier with the tilt-rotor. You know, Bell started

10:28   4   developing the tilt-rotor in the '50s. They didn't

10:28   5   sell a product until the '90s. It's not like the value

10:28   6   and the IP suddenly appeared magically over that first

10:28   7   sale of the aircraft. That value was there all along.

10:28   8   And, you know, right now, Bell's working on

10:28   9   the second generation of the tilt-rotor, the V-280.

10:28   10 They started development of that aircraft in 2013.

10:28   11 They just won the next phase of that program with the

10:28   12 U.S. Army, a program that's worth potentially

10:28   13 $70 billion.

10:28   14   They have yet to sell a single aircraft on the

10:28   15 V-280, and they won't probably for another five or six

10:28   16 years.

10:28   17   The intellectual property is protecting that

10:28   18 potential program that is worth $70 billion and

10:28   19 probably more when we add in sales to foreign allies.

10:28   20 That intellectual property is very important to

10:28   21 Textron. It's not like that value is zero until we

10:28   22 sell that first V-280 aircraft. It's there all along.

10:28   23   Q.   Is the sum of the development in drone

10:28   24 technology at Bell analogous to the value of the

10:29   25 development in the tilt-rotor prior to any revenue?

10:29 1   A.   Yeah. As we talked about earlier, the

10:29 2 development cycle on our aircraft, whether it's the

10:29 3 tilt-rotor or it's the drone, is a very long

10:29 4 development cycle because these are very complex

10:29 5 aircraft.

10:29 6   And so we're not -- similar to the way the

10:29 7 tilt-rotor, we developed it for years, for decades,

10:29 8 until we got a sale, that program is worth billions of

10:29 9 dollars to us. That's analogous to the drone program

10:29 10 where we've been developing it for decades now.

10:29 11   The Eagle Eye started in the '90s. We've been

10:29 12 building it for decades. We don't have a sale yet, but

10:29 13 that program, the drone program, is very essential to

10:29 14 Textron's businesses.

10:29 15   Q.   Did Bell Textron try to do anything else with

10:29 16 respect to DJI before filing a lawsuit?

10:29 17   A.   Yes. We did. We sent them a letter.

10:29 18   Q.   Do you recognize what's been marked as PTX --

10:29 19 Plaintiff's Exhibit 67?

10:29 20   A.   Yes. This is the letter that we sent to DJI

10:30 21 in September of 2019.

10:30 22   MR. MEEK: Your Honor, we move to admit

10:30 23 Plaintiff's Exhibit 67.

10:30 24   MR. SCHROEDER: No objection, Your Honor.

10:30 25   THE COURT: Admitted.

93

10:30 1   MR. MEEK: Thank you, Your Honor.

10:30 2   BY MR. MEEK:

10:30 3   Q.   Who wrote the letter?

10:30 4   A.   This letter came from Noah Tevis at Bell.

10:30 5   Q.   Who is Mr. Tevis?

10:30 6   A.   He is a patent attorney at Bell.

10:30 7   Q.   So why did the letter come from Bell and not

10:30 8   Textron Innovations?

10:30 9   A.   In all of our activities that Innovations does

10:30 10   we work jointly with the business unit. Innovations

10:30 11   doesn't do things unilaterally.

10:30 12   The technology originated from Bell, and so

10:30 13   any time we work with that technology, we do it

10:30 14   generally with Bell.

10:30 15   The Bell brand is a worldwide-known brand. It

10:30 16   was our opinion that this would receive more

10:30 17   recognition from DJI than sending it under Textron

10:30 18   Innovations' letterhead.

10:30 19   Q.   Is -- I think the letter references an offer

10:30 20   to sell the patent.

10:30 21   Is the sale of a patent the same as licensing

10:30 22   the patent?

10:31 23   A.   No. In one instance, you're transferring

10:31 24   ownership of the patent; in a license, you're granting

10:31 25   the licensee the well of rights -- certain rights to

94

10:31   1   the patent.

10:31   2   Q.   Why would there be an offer to sell a patent

10:31   3   instead of license a patent?

10:31   4   A.   This was just a letter to what I call open the

10:31   5   door to negotiations. The outcome of those

10:31   6   negotiations could have been any one of a number of

10:31   7   scenarios.

10:31   8   It could have been a license to the patent.

10:31   9   It could have been transfer ownership of the patent

10:31   10   with a license back to Bell. It could have been a

10:31   11   commercial venture, a joint venture or some commercial

10:31   12   relationship. It could have been any number of deals

10:31   13   that could have come out of the negotiation.

10:31   14   Q.   How did DJI respond to all those different

10:31   15   options in the negotiation?

10:31   16   A.   We never heard back from DJI.

10:31   17   Q.   Was there any negotiation?

10:31   18   A.   There was no negotiation.

10:31   19   Q.   Was there any letter?

10:31   20   A.   There was no letter.

10:31   21   Q.   E-mail? Phone call?

10:31   22   A.   There was no e-mail, no phone call, no

10:31   23   communication at all.

10:31   24   Q.   In your experience, do companies that receive

10:31   25   entrees like this generally not respond at all?

10:32   1   A.   That was very surprising that we got no

10:32   2   response at all.

10:32   3   Q.   So what did Bell do after not receiving any

10:32   4   response?

10:32   5   A.   We were forced to file a lawsuit to protect

10:32   6   our rights.

10:32   7   Q.   What is Bell Textron hoping the jury will do

10:32   8   in this case?

10:32   9   A.   We're hoping that the jury will award a

10:32   10   reasonable royalty for DJI's use of our patented

10:32   11   technology.

10:32   12   Q.   Can you explain what a royalty means?

10:32   13   A.   Yes. A royalty is -- it's a share of the

10:32   14   benefit derived by the licensee for the use of the

10:32   15   patented technology.

10:32   16   I think it's analogous to a rent. You pay

10:32   17   rent for use of someone's property. That's what a

10:32   18   reasonable royalty is.

10:32   19   Q.   Is a royalty -- like you said "rent." I pay

10:32   20   that every month.

10:32   21   Is a royalty typically like that where you pay

10:32   22   it off over time or is -- could it also be all at once

10:32   23   up front?

10:32   24   A.   Yeah. It could be a number of different ways

10:32   25   you could do it; you'd structure it. It could be a

10:32 1   lump sum that you pay. You could do what I call a

10:33 2   running royalty that's paid over time. It could be a

10:33 3   combination of the two. I've done transactions that

10:33 4   are all of those above.

10:33 5   Q.   Does Bell Textron have a preference between a

10:33 6   running royalty and an upfront royalty?

10:33 7   A.   Yeah. Our preference is a running royalty

10:33 8   because that matches the payment with the usage, and so

10:33 9   we think that's the most fair for both parties because

10:33 10   it directly aligns the payment of the royalty with the

10:33 11   sales of the product being licensed.

10:33 12   Q.   So if the sales go up, the royalty goes up; if

10:33 13   the sales are not as successful, the royalty stays low,

10:33 14   correct?

10:33 15   A.   That's correct.

10:33 16   Q.   What is the normal process for Bell Textron to

10:33 17   decide what -- how you get to a fair royalty?

10:33 18   A.   We would have to undertake a valuation of the

10:33 19   intellectual property.

10:33 20   Q.   And how do you do that?

10:33 21   A.   We look at the benefit that's derived by the

10:33 22   prospective licensee for the use of the technology and

10:33 23   what a fair share of that would be coming back to the

10:34 24   licensor.

10:34 25   Q.   Is -- if -- in that valuation, is that

97

10:34   1   performed in cooperation with the company like Bell?

10:34   2   A.   Yes.   Because, you know, Innovations doesn't

10:34   3   have the expertise on the drone technology on the

10:34   4   market.   You know, there's individuals at Bell that

10:34   5   have that, and that's why on -- any time we're doing a

10:34   6   license agreement, we work very closely with the

10:34   7   business unit that has that expertise on determining

10:34   8   those factors.

10:34   9   Q.   Are there any specific approaches or

10:34   10   methodologies that Bell Textron considers when it's

10:34   11   trying to do this work?

10:34   12   A.   Yes.   There's three that we use all the time.

10:34   13   Q.   What are they?

10:34   14   A.   Those are the cost approach, what we call the

10:34   15   income approach and the market approach.

10:34   16   Q.   Could you please explain those three

10:34   17   approaches to the jury?

10:34   18   A.   Sure.   The income approach is where we look at

10:34   19   the benefit derived, as I said earlier, of the licensed

10:34   20   technology for the licensee and try to look at it from

10:35   21   their business case and what a fair share of that

10:35   22   income would be for the licensors, the licensor

10:35   23   getting -- receiving for the licensee's use of that

10:35   24   technology.

10:35   25   Q.   And then you mentioned the market approach?

98

10:35 1   A.   Yes. The market approach is looking at what I

10:35 2 call comparable transactions. Are there other

10:35 3 transactions that have been done that are very similar

10:35 4 to this transaction that you can use as a benchmark for

10:35 5 this contemplated transaction?

10:35 6   Q.   Going to the specific case, has Bell or

10:35 7 Textron Innovations ever licensed these two patents to

10:35 8 any other party?

10:35 9   A.   We have not.

10:35 10   Q.   Are there any agreements that you would deem

10:35 11 comparable so that you could use the market approach in

10:35 12 this case?

10:35 13   A.   I don't believe there are any agreements that

10:35 14 are comparable to this one.

10:35 15   Q.   Is the market approach then appropriate?

10:35 16   A.   No. In this case, we don't feel the market

10:35 17 approach is a valid approach to use.

10:35 18   Q.   Okay. So I think you've done income and

10:35 19 market and the last one was cost?

10:35 20   A.   The other one was cost.

10:35 21   Q.   What is cost approach?

10:35 22   A.   The cost approach -- and we do the cost

10:35 23 approach all the time when we're licensing technical

10:36 24 data. And the cost approach essentially says, okay.

10:36 25 If the licensee didn't license this technology from

99

10:36   1   you, what would their cost be to go off and do it on

10:36   2   their own?

10:36   3   It happens all the time with our technical

10:36   4   data licenses.

10:36   5   In a patent case, the licensee doesn't have

10:36   6   the option of going off and doing it on its own because

10:36   7   it's protected by a patent. So in this instance, I

10:36   8   don't think the cost approach is appropriate.

10:36   9   Q.   Okay. So if the cost approach and the market

10:36   10   approach aren't appropriate, what is appropriate?

10:36   11   A.   So we -- the income approach is the one that

10:36   12   we think is appropriate.

10:36   13   Q.   Okay. Did you -- did Bell Textron or Textron

10:36   14   Innovations actually perform any of these evaluations

10:36   15   for the case of the two patents?

10:36   16   A.   No. We did not.

10:36   17   Q.   Why not?

10:36   18   A.   Because in order to properly do a valuation,

10:36   19   it required information from the prospective licensee,

10:36   20   and we were not privy to that information.

10:36   21   Q.   Why not?

10:36   22   A.   Because DJI did not allow us to have that

10:36   23   information.

10:36   24   Q.   In fact, they never called you back?

10:36   25   A.   That's correct.

10:36 1   Q.   When licensing its patents and doing these

10:37 2   valuation exercises, does Bell or Textron Innovations

10:37 3   consider potential competition with the other party?

10:37 4   A.   That's a very important factor. It comes into

10:37 5   play.

10:37 6   Q.   Why?

10:37 7   A.   Well, because if we're licensing the

10:37 8   technology to a competitor of ours, we're helping the

10:37 9   competitor's business, and we're helping the

10:37 10   competitor's business compete against us.

10:37 11   And so there's a potential adverse impact of

10:37 12   that on our own business by licensing technology, and

10:37 13   we would have to be compensated appropriately for that

10:37 14   potential adverse impact.

10:37 15   Q.   Would that tend to drive up the price or drive

10:37 16   down the price?

10:37 17   A.   That would drive up the price because not only

10:37 18   do you have to factor in the benefit being derived by

10:37 19   the licensee from the technology, but also the risk to

10:37 20   our business, the detriment to our business by

10:37 21   helping -- by supporting a competitor.

10:37 22   Q.   So effectively, you have to add what they're

10:37 23   getting and what you're losing together to get the

10:37 24   value, right?

10:37 25   A.   That's correct.

10:37 1   Q.   Would you describe DJI as a potential

10:38 2   competitor of Bell Textron?

10:38 3   A.   No one's going to go into Best Buy and look on

10:38 4   the shelf and say, oh, I can buy a DJI Mavic 3 drone or

10:38 5   I can buy a Bell model 429 helicopter, right? The

10:38 6   helicopter would never fit on the shelf.

10:38 7   But that's what our customers are doing.

10:38 8   Utility customers that traditionally always inspected

10:38 9   utility lines using a helicopter, now many of them are

10:38 10 doing that same activity, that same inspection, using

10:38 11 drone aircraft.

10:38 12   So our customers are making that decision

10:38 13 today. Do I go with a drone? Do I go with a

10:38 14 helicopter to perform my job? So in essence, yes, in

10:38 15 our customers' eyes, there is a choice in the -- on

10:38 16 which product to use.

10:38 17   And as Bell gets more and more into the drone

10:38 18 space and DJI's drones become more and more

10:38 19 sophisticated, if they're not a direct competitor

10:38 20 today, it's highly likely they will be in the future.

10:38 21   Q.   So how does this market convergence, this --

10:39 22 we're going to run into them in a few years -- how does

10:39 23 that affect that negotiation with DJI?

10:39 24   A.   So if we're licensing DJI, the technology, we

10:39 25 would be helping them compete against us, and we would

—102—

10:39   1   need appropriate compensation for that.

10:39   2   Q.   Has anything changed since 2019 with respect

10:39   3   to DJI and that letter?

10:39   4   A.   Yes. It has.

10:39   5   Q.   What has changed?

10:39   6   A.   The Department of Defense came out with a

10:39   7   press release of companies they consider to be Chinese

10:39   8   military companies.

10:39   9   Q.   Could you please look at Plaintiff's

10:39   10 Exhibit 31?

10:39   11   Are you there?

10:39   12   A.   Yes.

10:39   13   Q.   And what is Plaintiff's Exhibit 31?

10:39   14   A.   This is the press release from the Department

10:39   15 of Defense identifying companies that they consider to

10:39   16 be Chinese military companies.

10:39   17   Q.   Can you read the title? It starts "DoD

10:39   18 releases."

10:39   19   A.   DoD releases list of People's Republic of

10:40   20 China (PRC) military companies in accordance with

10:40   21 Section 1260H of the National Defense Authorization Act

10:40   22 for fiscal year 2021.

10:40   23   Q.   And you understand that this press release was

10:40   24 issued by the Department of Defense of the U.S.

10:40   25 government?

10:40	1	A. Yes. That's correct.
10:40	2	MR. MEEK: Your Honor, we move to admit
10:40	3	PTX-31 into evidence.
10:40	4	MR. SCHROEDER: No objection, Your Honor.
10:40	5	THE COURT: Admitted.
10:40	6	MR. MEEK: Thank you.
10:40	7	BY MR. MEEK:
10:40	8	Q. And could you please turn to PTX-32?
10:40	9	What is that?
10:40	10	A. This is the actual list of companies.
10:40	11	Q. Could you read the title of it? I think it
10:40	12	says "entities identified."
10:40	13	A. Print's a little smaller.
10:40	14	Q. Come on, old man. Get your glasses on.
10:40	15	A. Entities identified as Chinese military
10:40	16	companies operating in the United States in accordance
10:40	17	with Section 1260H of the William M. Thornberry
10:40	18	National Defense Authorization Act for fiscal year
10:40	19	2021, public law 116-283.
10:41	20	Q. Thank you.
10:41	21	And is it your understanding that this
10:41	22	publication comes from the Department of Defense of the
10:41	23	U.S. government?
10:41	24	A. Yes. That's correct.
10:41	25	MR. MEEK: Plaintiff moves to admit

10:41	1	PTX-32 into evidence.
10:41	2	MR. SCHROEDER: No objection.
10:41	3	THE COURT: It'll be admitted.
10:41	4	Counsel, would this be a good place to
10:41	5	take a short break?
10:41	6	MR. MEEK: Terrific place.
10:41	7	THE COURT: Ladies and gentlemen of the
10:41	8	jury, we're going to take a short recess.
10:41	9	Couple of rules I have to impose on you.
10:41	10	The first is you may not discuss anything that you've
10:41	11	heard in the courtroom with each other until you begin
10:41	12	your deliberations. So you all are free to talk about
10:41	13	anything you want back in the jury room. I don't know
10:41	14	what that is but whatever it is, is fine. But you
10:41	15	can't discuss what you heard, for example, this morning
10:41	16	in the testimony.
10:41	17	Second, you may not do independent
10:41	18	research. And I guess recent -- I won't say which one,
10:41	19	but I read an article in the past week where there was
10:42	20	a very national story where one of the jurors came in
10:42	21	in the middle of trial and they had done independent
10:42	22	research and thought that he or she was assisting the
10:42	23	other jurors by telling them what they'd read outside
10:42	24	of the courtroom.
10:42	25	We don't do an independent research here.

10:42	1	We listen to the evidence, and we decide based on what
10:42	2	the evidence is.
10:42	3	And finally, I'm told by my college-aged
10:42	4	sons that there is something called social media. I'm
10:42	5	not part of it, but I'm not telling you that you aren't
10:42	6	allowed to continue to do whatever -- if you are on
10:42	7	social media, that's fine, but please don't post
10:42	8	anything about the trial on social media until after --
10:42	9	you're free to do whatever you want after the verdict
10:42	10	comes in, but during the course of this week please
10:42	11	don't post anything about the trial.
10:42	12	Those are the rules. If you all will
10:42	13	step outside for about ten minutes and take a short
10:42	14	break, and then we'll come back and resume with this
10:42	15	witness.
10:43	16	THE BAILIFF: All rise.
10:43	17	(Jury exited the courtroom.)
10:43	18	THE COURT: You may be seated.
10:43	19	Counsel, is there anything we need to
10:43	20	take up before we come back in?
10:43	21	MR. MEEK: We have none.
10:43	22	MR. SCHROEDER: No, Your Honor.
10:43	23	THE COURT: You can step down, sir.
10:43	24	(Recess taken.)
10:54	25	THE BAILIFF: All rise.

10:54	1	THE COURT: Please remain standing.
10:54	2	(Jury entered the courtroom.)
10:55	3	THE COURT: Thank you. You may be
10:55	4	seated.
10:55	5	Counsel, you may resume.
10:55	6	MR. MEEK: Thank you, Your Honor.
10:55	7	BY MR. MEEK:
10:55	8	Q. Mr. Runstadler, I believe we were talking
10:55	9	about Plaintiff's Exhibit 31 and Plaintiff's
10:55	10	Exhibit 32.
10:55	11	Could you go back to those?
10:55	12	A. Yes.
10:55	13	Q. If you could just remind us what 31 and 32
10:55	14	are?
10:55	15	A. So 31 is a press release from the Department
10:55	16	of Defense identifying a number of companies that they
10:55	17	classify as Chinese military companies, and 32 is the
10:56	18	actual list of companies from the DoD.
10:56	19	Q. Is DJI listed on Plaintiff's Exhibit 32?
10:56	20	A. Yes. On the first page there's Shenzhen DJI
10:56	21	Innovation Technology Company, Limited (DJI).
10:56	22	Q. Is that DJI entity one of the defendants in
10:56	23	this action?
10:56	24	A. Yes. It is.
10:56	25	Q. Would DJI showing up on a list like this

10:56   1   impact Bell Textron's willingness to do a transaction

10:56   2   with DJI?

10:56   3   A.   It's something that we would really have to

10:56   4   think twice about doing. This is a list from the

10:56   5   Department of Defense. The Department of Defense is

10:56   6   our largest customer. As I mentioned earlier, we just

10:56   7   won the first phase of a once-in-a-generation program,

10:56   8   the V-280, that has potential to eventually replace all

10:57   9   of the Black Hawk helicopters, a program that's worth

10:57   10   in excess of $70 billion with the U.S. Army alone.

10:57   11   Yes, that's something that we'd have to think

10:57   12   very carefully about.

10:57   13   Q.   Does your answer in that or your thinking

10:57   14   about that, does it depend on whether or not DJI is

10:57   15   actually a Chinese military company?

10:57   16   A.   The DoD, our major customer, says they are.

10:57   17   That's the important thing to us.

10:57   18   Q.   Do you think -- you mentioned the $70 billion

10:57   19   contract that was recently awarded. Do you think that

10:57   20   if the U.S. government learned of this or was aware of

10:57   21   this, that it could actually impact that contract?

10:57   22   A.   The potential is there as I -- you know, the

10:57   23   program is so large and so important to the company

10:57   24   that any potential impact would have to be considered.

10:57   25   Q.   Mr. Runstadler, I understand that the U.S.

108

10:57	1	government's view raises these issues, but are you
10:58	2	saying that no deal with DJI would ever have been
10:58	3	possible?
10:58	4	A. No. That's not true. I think we'd have to
10:58	5	put maybe some guidelines around a potential deal that
10:58	6	says to mitigate what the DoD's concerns are to reduce
10:58	7	our risk of any adverse impact from the DoD.
10:58	8	Q. Why would you do that?
10:58	9	A. Because our major customer says, in this list,
10:58	10	be very careful about working with these companies when
10:58	11	it comes to technology.
10:58	12	If we're going to turn around and work with a
10:58	13	company on the list with respect to technology, we
10:58	14	would have to maybe put some mitigation measures in
10:58	15	place to address the Department of Defense's concerns.
10:58	16	Q. When Bell Textron reached out to DJI in 2019
10:58	17	with that letter, did Bell Textron know about this
10:58	18	potential that DJI might be put on such a list?
10:58	19	A. We did not. We hadn't done an evaluation of
10:59	20	DJI in 2019.
10:59	21	Q. Is it -- is that something you could have
10:59	22	found out?
10:59	23	A. Yeah. Any time that we're -- whether it's
10:59	24	Bell or any other Textron company does business with a
10:59	25	third party, we go through a vetting process. We have

109

10:59   1   a special group at Bell that does that, a special group

10:59   2   at the corporate office that does that that essentially

10:59   3   assesses, vets third parties for a number of issues,

10:59   4   and I would be surprised if this potential issue

10:59   5   didn't -- wouldn't have popped up if we had done that

10:59   6   assessment.

10:59   7   Q.   Why didn't you do that assessment in 2019?

10:59   8   A.   There was no negotiations in 2019. There's no

10:59   9   deal at that time. This was just a opening -- the

10:59   10   letter we sent them was an opening to say, hey, we'd

10:59   11   like to do a deal.

10:59   12   Q.   Does this -- the sensitivity in the issues

10:59   13   that we've been discussing of late, does that indicate

10:59   14   to you that Bell Textron or the Textron companies have

11:00   15   some sort of a bias against doing business with foreign

11:00   16   companies?

11:00   17   A.   No. Not at all. Bell sells its helicopters

11:00   18   around the world. There's very few countries that Bell

11:00   19   doesn't sell its helicopters in around the world.

11:00   20   Q.   Does that include China?

11:00   21   A.   Yes. Bell has a lot of business in China. In

11:00   22   fact, Bell has a service center in China outside

11:00   23   Shanghai, where we service the customers that we

11:00   24   support in China. China is a very important helicopter

11:00   25   market for Bell, and we sell a lot of helicopters there

-110-

11:00   1   and support them.

11:00   2   Q.   Mr. Runstadler, do you think that DJI is still

11:00   3   offering drones for sale in the United States today?

11:00   4   A.   Yes. I do.

11:00   5   Q.   How do you know that?

11:00   6   A.   Because this past weekend we went online and

11:00   7   bought one.

11:00   8   Q.   Can we buy a drone right now, do you think?

11:00   9   A.   I think we can.

11:00   10   Q.   What is this?

11:00   11   A.   This is DJI's website, dji.com.

11:00   12   Q.   Does it say anywhere on this website who

11:01   13   operates it and who is offering these for sale?

11:01   14   A.   Yeah. If you scroll down to the bottom, in

11:01   15   the fine print at the bottom there's one called "terms

11:01   16   of use." You click on that. And then if you scroll

11:01   17   down towards the bottom --

11:01   18   Q.   Well, first, let's do the first line.

11:01   19   Can you read the first clause in that first

11:01   20   sentence?

11:01   21   A.   Yes. It says: Thank you for your interest in

11:01   22   SZ DJI Technology Company, Limited.

11:01   23   Q.   Is that the same company that we were

11:01   24   discussing earlier with the list from the government?

11:01   25   A.   Yes. It is.

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11:01   1   Q.   And now, you say we were going to scroll down.

11:01   2   Where should we go?

11:01   3   A.   Scroll down towards the bottom on No. 20.

11:01   4   Q.   What is 20 -- Paragraph 20 titled?

11:01   5   A.   "Business Information."

11:01   6   Q.   And if you could read the first clause in the

11:01   7   first line?

11:01   8   A.   This website is operated by SZ DJI Technology

11:01   9   Company, Limited.

11:01   10   Q.   Okay. So that's who we're doing business

11:02   11   with, right?

11:02   12   A.   That's correct.

11:02   13   Q.   And is SZ DJI Technology Company, Limited -- I

11:02   14   think I got that right -- is that a named defendant in

11:02   15   this action?

11:02   16   A.   Yes. It is.

11:02   17   Q.   Okay. So let's go on -- how -- what's the

11:02   18   next step in buying a drone?

11:02   19   A.   If you go down to the bottom there, that

11:02   20   button -- white button that says "Shop Now."

11:02   21   Q.   Cleverly labeled "Shop Now." Got it.

11:02   22   So now where are we?

11:02   23   A.   You can go down and click the DJI Mavic.

11:02   24   Q.   Okay. We're going to go look at a Mavic. So

11:02   25   let's do that.

112

11:02   1   And these are the -- some of the drones from

11:02   2   DJI's offerings; is that right?

11:02   3   A.   That's correct.

11:02   4   Q.   Okay. Which one are we looking at? What's

11:02   5   your favorite?

11:02   6   A.   The second row there, the DJI Mavic 3.

11:02   7   Q.   Okay. And we just click that.

11:02   8   And what is this page -- landing page doing?

11:02   9   A.   This is a landing page for that model. And if

11:02   10 you scroll down a bit.

11:03   11   Q.   Trying to sell us insurance, right?

11:03   12   A.   That's correct.

11:03   13   Q.   Okay.

11:03   14   A.   Actually, the button is off the screen on

11:03   15 mine, but there's a blue button there --

        16   Q.   There you go.

11:03   17   A.   -- that's half visible on my screen that

11:03   18 says "Shop Now."

11:03   19   Q.   Once again, cleverly labeled "Shop Now."

11:03   20 Okay. Let's hit that.

11:03   21   Now they're trying to sell us the insurance.

11:03   22 Okay.

11:03   23   A.   This is the warranty. If you scroll down, the

11:03   24 blue button on there.

11:03   25   Q.   Yep. Let's go without coverage, okay?

11:03   1   And we don't need accessories so what do we

11:03   2   do?

11:03   3   A.   So that item was added to the cart, and then

11:03   4   you can go "View Cart & Check Out."

11:03   5   Q.   Okay.

11:03   6   MR. MEEK: Then scroll down.

         7   BY MR. MEEK:

11:03   8   Q.   And we hit "Check Out," right?

11:03   9   A.   You can check out.

11:03   10   Q.   Okay.

11:03   11   MR. MEEK: So let's not buy another drone

11:03   12   but, Mr. Patterson, can you show us what happened on

11:04   13   Saturday?

11:04   14   Is it working?

         15   BY MR. MEEK:

11:04   16   Q.   So what are we looking at here,

11:04   17   Mr. Runstadler?

11:04   18   A.   This was the checkout that we did this past

11:04   19   weekend.

11:04   20   Q.   Okay. And what did we do after filling all

11:04   21   this out?

11:04   22   A.   We placed the order.

11:04   23   Q.   And then what happened, Mr. Patterson (sic)?

11:04   24   What's this say?

11:04   25   A.   This says "Payment Completed."

114

11:04   1   Q.   Has that order shipped?

11:04   2   A.   Yes. It has.

11:04   3   Q.   So we successfully purchased a drone in the

11:04   4   United States from DJI Technology, Limited, correct?

11:04   5   A.   Yes. That drone is on its way from China

11:04   6   to -- being shipped to Texas.

11:05   7   MR. MEEK: No further questions.

11:05   8   MR. SCHROEDER: Your Honor, may I

11:05   9   approach the witness?

11:05   10   CROSS-EXAMINATION

11:05   11   BY MR. SCHROEDER:

11:05   12   Q.   Good morning, Mr. Runstadler.

11:05   13   A.   Good morning.

11:05   14   Q.   You're employed by Textron Innovations, the

11:05   15   plaintiff in this case; is that correct?

11:05   16   A.   That's correct.

11:05   17   Q.   And Textron Innovations does not make any

11:05   18   products; is that right?

11:05   19   A.   That's correct.

11:05   20   Q.   They don't perform any research or

11:06   21   development?

11:06   22   A.   That is correct.

11:06   23   Q.   And they don't have any competitors; is that

11:06   24   correct?

11:06   25   A.   Innovations does not directly have any

11:06	1	competitors. No.
11:06	2	Q. Innovations has four employees, correct?
11:06	3	A. That's correct.
11:06	4	Q. And a single office in Providence, Rhode
11:06	5	Island?
11:06	6	A. Two of the employees in Providence and two
11:06	7	employees down in Texas.
11:06	8	Q. Okay. Textron does not sell any physical
11:06	9	products; is that correct?
11:06	10	A. Textron?
11:06	11	Q. Textron Innovations. Pardon me.
11:06	12	A. Textron Innovations does not sell any physical
11:06	13	products. That's correct.
11:06	14	Q. So Textron Innovations sells or licenses
11:06	15	intellectual property like patents; is that correct?
11:06	16	A. That's correct.
11:06	17	Q. And over the past five years, Textron
11:06	18	Innovations' revenue in licensing intellectual property
11:06	19	has ranged from the high teens in the millions to the
11:06	20	high 50s in millions; isn't that correct?
11:06	21	A. That is correct. Yes.
11:06	22	Q. I handed you up a binder with some exhibits in
11:06	23	there, and I'd like you to turn first to the exhibit
11:07	24	tabbed -- that's labeled DX-161.
11:07	25	Could you do that, please?

116

11:07   1   A.   Yes.

11:07   2   Q.   What is this exhibit? Have you seen this?

11:07   3   A.   Yes. This looks to be a valuation that we

11:07   4   did.

11:07   5   Q.   And your team creates these documents; is that

11:07   6   correct?

11:07   7   A.   Yes. That's correct.

11:07   8   MR. SCHROEDER: Your Honor, I'd like to

11:07   9   move Defendants' Exhibit 161 into evidence.

11:07   10   MR. MEEK: No objection, Your Honor.

11:07   11   THE COURT: Admitted.

11:07   12   BY MR. SCHROEDER:

11:07   13   Q.   Also have you do a similar exercise with the

11:07   14   next exhibit tabbed Defendants' Exhibit 199, DX-199.

11:07   15   MR. MEEK: No objection, Your Honor.

11:07   16   THE COURT: Admitted.

11:07   17   BY MR. SCHROEDER:

11:07   18   Q.   Okay. And similar with Defendants'

11:08   19   Exhibit 205.

11:08   20   MR. MEEK: No objection, Your Honor.

11:08   21   THE COURT: Admitted.

11:08   22   MR. SCHROEDER: And let's do Defendants'

11:08   23   Exhibit 253.

11:08   24   MR. MEEK: No objection, Your Honor.

11:08   25   THE COURT: Admitted.

11:08   1   MR. SCHROEDER: Defendants' Exhibit 515.

11:08   2   MR. MEEK: No objection, Your Honor.

11:08   3   THE COURT: Admitted.

11:08   4   MR. SCHROEDER: And Defendants'

11:08   5   Exhibit 816.

11:08   6   MR. MEEK: No objection, Your Honor.

11:08   7   THE COURT: Admitted.

11:08   8   BY MR. SCHROEDER:

11:08   9   Q.   And I thought you testified on direct,

11:08   10   Mr. Runstadler, that Bell intends to sell products that

11:08   11   practice these patents in the future.

11:08   12   Is that your testimony?

11:08   13   A.   That's correct. Yes.

11:08   14   Q.   But yet in 2019, Textron decided to sell the

11:08   15   '909 patent. That's what the letter said, correct?

11:08   16   A.   The letter did say an offer for sale. Yes.

11:08   17   Q.   And Textron has never actually sold any

11:08   18   patents; is that right?

11:08   19   A.   We have not sold any patents. That's correct.

11:08   20   Q.   But yet this patent, Textron offered to sell

11:08   21   it to DJI and Autel, and the letter said to the whole

11:09   22   drone industry, correct?

11:09   23   A.   We sent a letter to DJI, and we sent a letter

11:09   24   to Autel. That's correct.

11:09   25   Q.   And Autel's another drone company; isn't it?

11:09   1   A.   Yes. It is.

11:09   2   Q.   Did Autel express any interest in the patent

11:09   3   that Textron was trying to sell?

11:09   4   A.   We did not hear back from Autel.

11:09   5   Q.   Has any company ever made an offer to license

11:09   6   any of the patents at issue in this case?

11:09   7   A.   We've only sent letters to DJI and Autel.

11:09   8   Q.   And neither one of them made any offers to

11:09   9   license this patent?

11:09   10   A.   That is correct.

11:09   11   Q.   Okay. Did anyone offer to buy the patent?

11:09   12   A.   No.

11:09   13   Q.   And you don't know Textron's development costs

11:09   14   for the patents at issue; is that correct?

11:09   15   A.   That is correct.

11:09   16   Q.   Textron does not have a policy against

11:09   17   licensing patents to competitors.

11:09   18   You agree, right?

11:09   19   A.   We do not have a policy. No.

11:09   20   Q.   So you do not have a policy against licensing

11:09   21   patents to competitors?

11:09   22   A.   That is correct.

11:09   23   Q.   In fact, Textron has licensed patents to its

11:10   24   competitors in the past, correct?

11:10   25   A.   We have. Yes.

11:10   1   Q.   And historically, when Textron valued its

11:10   2   intellectual property, it started with a 25 percent

11:10   3   baseline profit split and varied that rate up or down;

11:10   4   is that correct?

11:10   5   A.   That is correct. Yes.

11:10   6   Q.   And even after moving away from the 25 percent

11:10   7   baseline split, you agree that Textron's baseline still

11:10   8   falls in that same ballpark; is that correct?

11:10   9   A.   It depends upon the transaction. Yes.

11:10   10   Q.   And you talked about the DoD list that

11:10   11 identified DJI as a Chinese military company.

11:10   12   Do you recall that testimony?

11:10   13   A.   Yes.

11:10   14   Q.   That came out after, not before, this lawsuit

11:10   15 was filed; is that correct?

11:10   16   A.   That's my understanding. Yes.

11:10   17   Q.   And you described a vetting process Textron

11:10   18 performs when it's going to license its technology; is

11:10   19 that correct?

11:10   20   A.   That is correct. Yes.

11:10   21   Q.   But you didn't -- you didn't -- you offered

11:10   22 this patent, however, the '909 patent, to DJI and to

11:10   23 Autel without performing any of that vetting process;

11:11   24 isn't that correct?

11:11   25   A.   That is correct. Yes.

-120-

11:11   1   Q.   So you offered it to sale for anyone that was

11:11   2   interested?

11:11   3   A.   We offered to those two companies. Yes.

11:11   4   Q.   And you agree that Bell Textron -- and I'm not

11:11   5   talking about Textron Innovations -- but Bell Textron,

11:11   6   they do not practice the '909 patent in any product

11:11   7   that they sell, correct?

11:11   8   A.   That is correct.

11:11   9   Q.   Bell Textron does not practice the '752 patent

11:11   10   in any product that they sell; is that correct?

11:11   11   A.   I'm not aware of any product they sell.

11:11   12   That's correct.

11:11   13   Q.   Okay. And to your knowledge, the '909 patent

11:11   14   hasn't made Textron any money; is that correct?

11:11   15   A.   It's not in a product we sell. That is

11:11   16   correct.

11:11   17   Q.   And the same is true for the '752 patent,

11:11   18   correct?

11:11   19   A.   That is correct.

11:11   20   Q.   You cannot identify one DJI product that

11:11   21   competes with any Bell product, correct?

11:11   22   A.   I do not believe that is accurate.

11:11   23   Q.   Do you recall you had your deposition taken in

11:12   24   this case?

11:12   25   A.   Yes.

-121-

11:12   1   Q.   And, in fact, I took your deposition in this

11:12   2   case.

11:12   3   Do you recall?

11:12   4   A.   Yes.

11:12   5   Q.   Your deposition was on November 18th of 2002

11:12   6   (sic).

11:12   7   Does that sound correct?

11:12   8   A.   That's correct.

11:12   9   Q.   And so your testimony today is that you can't

11:12   10   identify products that compete -- DJI products that

11:12   11   compete with Bell products?

11:12   12   A.   As I mentioned in my testimony here,

11:12   13   there's -- our customers are making that choice between

11:12   14   the products.

11:12   15   Q.   Mr. Runstadler, that wasn't my question.

11:12   16   My question is, can you identify one DJI

11:12   17   product that competes with any Bell product?

11:12   18   A.   As a direct competitor, no.

11:12   19   Q.   And you don't own any DJI drones; is that

11:12   20   correct?

11:12   21   A.   That is correct.

11:12   22   Q.   You've never flown any of DJI's drones?

11:12   23   A.   I have never flown a DJI drone.

11:12   24   Q.   Would you agree that if this jury concludes

11:12   25   that the patents in this case are invalid, there would

11:12   1   be no material impact on Textron's business?

11:12   2   A.   I do not know whether that is true or not.

11:13   3   Q.   You testified during your direct about

11:13   4   Textron's 10-K.

11:13   5   Do you recall that testimony?

11:13   6   A.   Yes.

11:13   7   Q.   Okay. And it's Plaintiff's Exhibit 377 which

11:13   8   has already been admitted.

11:13   9   And I'd like to direct you -- so this is

11:13   10   what's up on the screen now.

11:13   11   Do you see that?

11:13   12   A.   Yes.

11:13   13   Q.   Thank you.

11:13   14   And this is an important document, correct?

11:13   15   A.   Yes. It is.

11:13   16   Q.   Everything in it is supposed to be true and

11:13   17   correct; isn't that right?

11:13   18   A.   That's correct.

11:13   19   Q.   Now, I'd like you to turn to Page 8 under the

11:13   20   title "Patents and Trademarks."

11:13   21   And there's a sentence that -- it's the last

11:13   22   sentence of that paragraph starting with "while."

11:13   23   Do you see that?

11:13   24   A.   Yes.

11:13   25   Q.   And it says: While our intellectual property

11:13   1   rights in the aggregate are important to the operation

11:13   2   of our business, we do not believe that any existing

11:14   3   patent, license, trademark or other intellectual

11:14   4   property right is of such importance that its loss or

11:14   5   termination would have a material adverse effect on our

11:14   6   business taken as a whole.

11:14   7   Do you see that?

11:14   8   A.   Yes.

11:14   9   Q.   And that's because none of the patents in this

11:14   10   case are that important to Textron's business; isn't

11:14   11   that correct?

11:14   12   A.   They're not material. That's correct. Yes.

11:14   13   Q.   I'd also like to turn your attention to

11:14   14   Page 24 of this document under the heading "Bell."

11:14   15   This reports Bell Textron's revenues for 2020;

11:14   16   isn't that correct?

11:14   17   A.   Yes.

11:14   18   Q.   And it shows those revenues -- am I reading

11:14   19   this right -- as $2.2 billion? Or actually it's -- I

11:14   20   think it's 3.3 billion; isn't that -- under total

11:14   21   revenues?

11:14   22   A.   Yes. That's correct.

11:14   23   Q.   And on those sales, Bell Textron's profits for

11:15   24   2020 were $462 million; isn't that correct?

11:15   25   A.   Yes.

11:15   1   Q.   And you understand Textron is asking for 367

11:15   2   million in this case?

11:15   3   A.   Yes.

11:15   4   Q.   Bell has not manufactured any drones for sale;

11:15   5   isn't that correct?

11:15   6   A.   That is correct.

11:15   7   Q.   Bell has only ever made prototype drones,

11:15   8   right?

11:15   9   A.   That is correct.

11:15   10   Q.   And during your direct you talked about how

11:15   11 you guys had purchased a DJI drone over the weekend.

11:15   12   Do you recall that testimony?

11:15   13   A.   Yes.

11:15   14   Q.   How many drones did you purchase?

11:15   15   A.   One.

11:15   16   Q.   Okay. So you agree that you bought more

11:15   17 drones from DJI this past weekend than the number of

11:15   18 drones that Bell Textron has ever sold after 80 years

11:15   19 of trying?

11:15   20   A.   I don't think we were in the drone market for

11:15   21 80 years.

11:15   22   Q.   Thank you, Mr. Runstadler.

11:15   23   MR. SCHROEDER: I have no further

11:15   24 questions.

11:15   25   REDIRECT EXAMINATION

125

11:15   1   BY MR. MEEK:

11:16   2   Q.   Mr. Runstadler, just a couple of things.

11:16   3   You are the president of Textron Innovations

11:16   4   within the conglomerate, correct?

11:16   5   A.   That's correct.

11:16   6   Q.   Is it Textron Innovations' job to make money

11:16   7   for the conglomerate?

11:16   8   A.   That is not our primary job, no.

11:16   9   Q.   What is your primary job?

11:16   10   A.   Our primary job is protecting the investments

11:16   11   in Textron's R&D.

11:16   12   Q.   Are you evaluated or is your team evaluated by

11:16   13   how much revenue you generate?

11:16   14   A.   That's not the primary evaluation, no.

11:16   15   Q.   Does it even come up in your evaluation?

11:16   16   A.   No.

11:16   17   Q.   Okay. The -- counsel asked you about the fact

11:16   18   that the study or vetting of Autel and DJI hadn't

11:16   19   happened when the letter was sent.

11:16   20   Do you remember that?

11:16   21   A.   Yes.

11:16   22   Q.   And is there a reason why the full vetting

11:16   23   process had not happened when the letter was sent?

11:17   24   A.   Yes. That vetting process requires input from

11:17   25   the party being vetted. Without that input, we can't

126

11:17   1   do the vetting process.

11:17   2   Q.   Why couldn't you have vetted DJI specifically?

11:17   3   A.   Because they never responded to our letter, we

11:17   4   never entered into negotiations with them.

11:17   5   Q.   If the patents are invalidated, would that

11:17   6   harm the position of the drone body of work, the R&D?

11:17   7   A.   Yes.   Those patents --

11:17   8   Q.   How?

11:17   9   A.   Yes.   Those patents are protecting the

11:17   10 technology that was developed and is being used in the

11:17   11 drone technology development.

11:17   12   Q.   Immediately before the first tilt-rotor was

11:17   13 awarded a multibillion dollar contract, was the

11:17   14 prototype of that tilt-rotor valuable to Bell?

11:17   15   A.   It certainly was, yes.

11:17   16   Q.   Are prototypes in general valuable to Bell?

11:17   17   A.   They're essential as part of the development

11:17   18 process and also as proving up the technology and

11:18   19 demonstrating that to the customer.

11:18   20   Q.   Even though no revenue is generated by

11:18   21 prototypes, correct?

11:18   22   A.   That's correct.

11:18   23   MR. MEEK: No further questions.

11:18   24   MR. SCHROEDER: Nothing further,

11:18   25 Your Honor.

11:18   1   THE COURT: Thank you. You may step

11:18   2   down, sir.

11:18   3   Who's your next witness?

11:18   4   MR. SIEGMUND: Your Honor, plaintiff

11:18   5   calls John Wittmaak.

11:18   6   (The witness was sworn.)

11:18   7   DIRECT EXAMINATION

11:18   8   BY MR. SIEGMUND:

11:19   9   Q.   Good morning, sir. How are you this morning?

11:19   10   A.   Very good.

11:19   11   Q.   Can you state your full name for the record,

11:19   12   please?

11:19   13   A.   My name is John Robert Wittmaak, Jr.

11:20   14   Q.   And what are you here to testify today about,

11:20   15   sir?

11:20   16   A.   Yes. I'm here to speak to Bell's history, its

11:20   17   relationship with Textron, its work in unmanned

11:20   18   systems.

11:20   19   Q.   And where are you from originally, sir?

11:20   20   A.   I'm originally from northwest Pennsylvania. I

11:20   21   grew up in the country north of Pittsburgh.

11:20   22   Q.   And what got you down here to Texas?

11:20   23   A.   Yeah. So I grew up in the rural countryside.

11:20   24   I went to college for mechanical engineering and

11:20   25   interviewed at Bell Helicopter after college. And I

128

11:20   1   left a snowstorm in Pennsylvania. I landed here in

11:20   2   Texas, and it was 75 degrees and sunny. And I said,

11:20   3   this is where I need to be.

11:20   4   Q.   Got here as quick as you could?

11:20   5   A.   Yeah.

11:20   6   Q.   Where do you currently live, sir?

11:20   7   A.   I currently live in northwest Fort Worth in a

11:20   8   small town called Newark, Texas.

11:20   9   Q.   And can you briefly tell the jury a little bit

11:20   10   about yourself and your family?

11:20   11   A.   Yep. So as I mentioned earlier, I grew up in

11:21   12   northwest Pennsylvania, in a rural part, on a farm. So

11:21   13   grew up working on a lot of farm equipment, dirt bikes,

11:21   14   whatever other creations we would come up with. So

11:21   15   very early on I realized I wanted to go to school for

11:21   16   mechanical engineering.

11:21   17   Pennsylvania -- Penn State's one of the

11:21   18   mechanical engineering schools that are pretty

11:21   19   well-known. So I got accepted there. I graduated from

11:21   20   Penn State, applied at Bell Helicopter. As I

11:21   21   mentioned, I end up here. Love the weather, love the

11:21   22   area.

11:21   23   After working at Bell for a few years, I met

11:21   24   my wife. She's a Texas native, another great reason

11:21   25   why I love this state, and we've been married for about

129

11:21   1   15 years now. I have three young boys, an

11:21   2   eight-year-old, a five-and-a-half-year-old and

11:21   3   almost-two-year-old. Their names are Jack, Eli and

11:22   4   Hunter.

11:22   5   Q.   So you're in the busy stage?

11:22   6   A.   Yes. I'd say so.

11:22   7   Q.   How many degrees do you have, sir?

11:22   8   A.   I have two degrees, one from Penn State for a

11:22   9   bachelor of science in mechanical engineering, and I

11:22   10   also have one from SMU in Dallas for a master of

11:22   11   science in systems engineering.

11:22   12   Q.   Who's your current employer?

11:22   13   A.   Bell Textron.

11:22   14   Q.   And remind us, when did you start working for

11:22   15   Bell Textron?

11:22   16   A.   2005, after I graduated college.

11:22   17   Q.   Okay. About 18 years?

11:22   18   A.   Yes, sir.

11:22   19   Q.   Okay. And what are some of the roles you've

11:22   20   had while at the company?

11:22   21   A.   So my roles have been pretty broad but all

11:22   22   within the discipline of engineering. So started out

11:22   23   very early in my career as an individual contributor

11:22   24   doing a number of different IRAD projects, working on a

11:22   25   number of different programs at Bell, and then

—130—

11:22   1   gradually working my way up into management, technical

11:22   2   management primarily, to now where I'm a manager on the

11:23   3   V-280 Valor program.

11:23   4   Q.   And what are some of the aircraft you've

11:23   5   worked on during your time at Bell?

11:23   6   A.   So I've supported a wide range of commercial

11:23   7   products, the Bell 412, the 407, the 525. I've also

11:23   8   supported a lot of the military aircraft which would be

11:23   9   the Huey and the Cobra, the V-22 Osprey.

11:23   10   Q.   Did you do any work on drones?

11:23   11   A.   Yes, sir. When I was on the innovation team

11:23   12 for several years, I worked on a number of different

11:23   13 drones.

11:23   14   Q.   And you also mentioned the 525.

11:23   15   What is that?

11:23   16   A.   So the 525 is a -- what they call a super

11:23   17 medium twin helicopter. It's currently underdeveloped.

11:23   18 It's soon to enter market. It's a -- it was designed

11:23   19 for oil and gas exploration out at sea. So it's

11:23   20 designed to fly oil rig personnel out to the oil rigs,

11:24   21 you know, long distances over water.

11:24   22   It'll be the first commercially certified

11:24   23 fly-by-wire helicopter. So it's pretty advanced. It's

11:24   24 kind of one-of-a-kind in the industry.

11:24   25   Q.   What does fly-by-wire mean?

11:24   1   A.   Sure.   So the fly-by-wire means that there are

11:24   2   no mechanical connections between the joysticks that

11:24   3   the pilots operate and the aerodynamic surfaces; so the

11:24   4   rotor blades.   That's all done through computer wires

11:24   5   and electronics.

11:24   6   Q.   And what is your current role with Bell

11:24   7   Textron?

11:24   8   A.   So my current role is a senior manager on the

11:24   9   V-280 Valor for what they call fluid mechanical

11:24   10   systems.   That's the, you know, fuel system,

11:24   11   hydraulics, environmental controls, things like that.

11:24   12   Q.   And before you transitioned to your current

11:24   13   role, how long had you spent working on UAVs with Bell?

11:24   14   A.   So I worked on UAVs for about three to four

11:24   15   years in the innovation team.

11:25   16   Q.   Do you hold any patents, sir?

11:25   17   A.   Yes, sir.

11:25   18   Q.   How many?

11:25   19   A.   I have six patents awarded by the U.S. patent

11:25   20   and trade office.   I have ten patents in application

11:25   21   form in the Patent Office, and I have about ten more

11:25   22   patents in process at Bell Textron.

11:25   23   Q.   And did you prepare some slides for the jury

11:25   24   as an aid to this presentation?

11:25   25   A.   Yes.   I did.

132

11:25   1   Q.   Okay.

11:25   2   MR. SIEGMUND: If we could go ahead and

11:25   3   show those, Ms. Clark.

11:25   4   Can y'all see that okay?

11:25   5   Okay. Great.

        6   BY MR. SIEGMUND:

11:25   7   Q.   Okay, sir. This is Slide 2.

11:25   8   Can you tell the jury what we're looking at on

11:25   9   Slide 2, please, sir?

11:25   10   A.   Sure. So basically this is a slide to kind of

11:25   11   explain the history of Bell. It started out -- Bell

11:25   12   was a company founded by Larry Bell. It was focused on

11:26   13   post-war fixed-wing aircraft primarily.

11:26   14   And then a gentleman named Arthur Young got to

11:26   15   know Larry Bell through various connections, but he was

11:26   16   a philosopher who wanted to change the world in ways

11:26   17   that -- for the better.

11:26   18   And so for whatever reason, he had selected

11:26   19   the idea or the concept of the helicopter of how he

11:26   20   wanted to leave his footprint on the world. And so he

11:26   21   convinced Larry Bell, the owner of the company, to

11:26   22   invest in him, and he started to develop the helicopter

11:26   23   concept or make it more feasible for everyday use.

11:26   24   And on the -- so the image of him on the left

11:26   25   is Arthur Young, and the image on the right is Arthur

11:26   1   Young using a remote-controlled aircraft probably in

11:26   2   the '30s or '40s to demonstrate his rotor designs that

11:26   3   were more easily flown.

11:26   4   What that accumulated in after several years

11:27   5   of development was the Model 47 helicopter, the

11:27   6   helicopter you see in the middle, which became the

11:27   7   first civil-certified helicopter ever produced.

11:27   8   Q.   And that helicopter there on the right that --

11:27   9   that's being remote controlled, is that a drone?

11:27   10   A.   Yes, sir.

11:27   11   Q.   Okay. And how might the ladies and gentlemen

11:27   12   know of that helicopter in the middle?

11:27   13   A.   Yep. So it became famous to the general

11:27   14   public to -- due to a TV show called M*A*S*H.

11:27   15   Q.   And what were some of Bell's most well-known

11:27   16   inventions at a high level?

11:27   17   A.   At a high level, and there are many, the first

11:27   18   civil-certified helicopter, Model 47 that we mentioned,

11:27   19   is one of them. During the Vietnam War, we developed

11:27   20   the Huey helicopter which supported the medivac

11:27   21   missions in Vietnam.

11:27   22   We designed and developed the X-1 aircraft,

11:27   23   which broke the sound barrier with Chuck Yeager. Later

11:28   24   we developed the tilt-rotor concept and some UAV

11:28   25   concepts as well that were tilt-rotor specifically.

11:28   1   Q.   And did you pull a video from Bell's website

11:28   2   to help explain Bell's history to the jury?

11:28   3   A.   Yes, sir.

11:28   4   Q.   Okay.

11:28   5   MR. SIEGMUND: Could we go to that,

11:28   6   Mr. Patterson, please?

11:28   7   (Video played.)

11:28   8   BY MR. SIEGMUND:

11:29   9   Q.   And that very last aircraft that we're

11:29   10   looking, what -- what is that aircraft?

11:29   11   A.   That is the Bell V-280 Valor. That's the

11:29   12   program that I currently support.

11:29   13   Q.   And is Bell Textron's brand valuable?

11:29   14   A.   Yes, sir.

11:29   15   Q.   And why would you say that?

11:29   16   A.   So any time you speak to someone in the

11:30   17   aerospace community or someone who works in the

11:30   18   aerospace community or relies on these aircraft, they

11:30   19   recognize the Bell product line as an innovative,

11:30   20   reliable product. So it carries its name pretty far

11:30   21   and wide.

11:30   22   Q.   How does Bell Textron protect its intellectual

11:30   23   property, its technology?

11:30   24   A.   So Bell Textron very much encourages its

11:30   25   employees, not just from engineering but from all areas

11:30   1   of the company, to patent their innovative, novel

11:30   2   ideas. And then, obviously, we defend those patents

11:30   3   when we feel they're being infringed upon.

11:30   4   Q.   And does Bell Textron have any locations here

11:30   5   in Texas?

11:30   6   A.   Yes. Quite a few actually. We're -- we have

11:30   7   a pretty large footprint sprinkled all across the DFW

11:30   8   metroplex where we do -- our headquarters are in Hurst,

11:30   9   Texas. Engineering is primarily located at that

11:30   10 location.

11:30   11   We also have a drive system machine center,

11:30   12 composite center of excellence, in the area as well,

11:31   13 and then we also have a facility in Amarillo, Texas

11:31   14 where we conduct our final assembly on a lot of our

11:31   15 military products but also some of our commercial

11:31   16 products.

11:31   17   Q.   Let's shift gears a little bit and talk about

11:31   18 Bell Textron's UAV business.

11:31   19   How familiar are you with that side of the

11:31   20 business?

11:31   21   A.   I'm very familiar with all Bell's recent

11:31   22 activities in that space.

11:31   23   MR. SIEGMUND: If we could go to Slide 4,

11:31   24 Mr. Patterson.

11:31   25 BY MR. SIEGMUND:

11:31   1   Q.   And what is Slide 4 depicting, sir?

11:31   2   A.   Yep. So this highlights Bell's history of

11:31   3   unmanned systems.

11:31   4   Q.   And could you briefly just walk the jury

11:31   5   through each of these systems?

11:31   6   A.   Absolutely. So on the left, in the 1940s,

11:31   7   there's Arthur Young flying a remote-controlled

11:31   8   aircraft that he used to kind of prove out the

11:31   9   concept -- rotor concept that he had for the

11:31   10   helicopter.

11:31   11   In the 1980s, the photo in the center -- I'll

11:31   12   highlight it with some red underneath of it -- it's a

11:32   13   Bell Boeing Pointer. It's an unmanned tilt-rotor.

11:32   14   So this is around the time that the V-22

11:32   15   Osprey was starting to take flight, and Bell recognized

11:32   16   that an unmanned tilt-rotor would have a lot of value.

11:32   17   So that program had its first flight in Hurst, Texas.

11:32   18   And then at the bottom closer to the right,

11:32   19   I'll underline in blue, is the Bell Eagle Eye. It's a

11:32   20   tilt-rotor as well but a much more advanced, arguably

11:32   21   way ahead of its time, tilt-rotor that Bell developed,

11:32   22   an evolution of the Pointer. It was capable of a lot

11:32   23   of autonomous features that were -- that are still --

11:32   24   aren't really accomplished today.

11:32   25   And then most recently, on the upper right

—137—

11:32   1   corner, you know -- I'll underline the two photos with

11:32   2   yellow -- are the Bell APT, autonomous pod transport.

11:33   3   It is the orange and yellow -- or orange and white

11:33   4   aircraft. It's an unmanned logistics aircraft.

11:33   5   And above that is the Micro UAS. It's a --

11:33   6   what's intended to be a soldier-born device, a

11:33   7   soldier-born sensor to help them see over the horizon.

11:33   8   And then in the bottom right is the V-247.

11:33   9   It's a larger unmanned system that was intended for

11:33   10   naval security operations.

11:33   11   Q.   And you mentioned the Eagle Eye.

11:33   12   How would you characterize the developments

11:33   13   that Bell Textron made through the Eagle Eye project?

11:33   14   A.   They were extremely innovative, well ahead of

11:33   15   its time, so much so that there wasn't anything on the

11:33   16   market that was capable of some of the features it had

11:33   17   embedded in it, let alone the fact that it was the only

11:33   18   tilt-rotor out there capable of vertical takeoff and

11:33   19   high-speed flight.

11:33   20   Q.   And did you leverage the Eagle Eye technology

11:33   21   into some of Bell's current products?

11:33   22   A.   Yes. As a matter of fact, my role in

11:33   23   innovation was a program manager for small/medium UAS

11:34   24   development. And as part of that role, I instructed

11:34   25   our engineers to collaborate with the Eagle Eye

-138-

11:34 1   engineers and integrate as much of that technology as a

11:34 2   starting point for the APT and the other drones that we

11:34 3   worked on.

11:34 4   Q.   And the inventors who worked on the Eagle Eye,

11:34 5   did they win any awards for their work?

11:34 6   A.   Yes. The Eagle Eye team won what's called the

11:34 7   "Chairman's Award." It's a Textron award for the

11:34 8   most -- you know, it's our most prestigious award.

11:34 9   In fact, it comes with quite a bit of

11:34 10   benefits, but it's the most prestigious award that we

11:34 11   have for innovation at the corporate level. So it's

11:34 12   not even just strictly at the Bell level. It's at the

11:34 13   corporate level.

11:34 14   Q.   So let's talk about Bell's current UAV

11:34 15   projects.

11:34 16   Now, can you go and buy one of these off the

11:34 17   shelf at Walmart?

11:34 18   A.   No, sir.

11:34 19   Q.   And why is that?

11:34 20   A.   The products that we've developed here have

11:34 21   very specific use cases in mind. We are following

11:35 22   customer direction and guidance on those.

11:35 23   Q.   And what are Bell Textron's current UAV

11:35 24   projects?

11:35 25   A.   They are the Bell APT, the orange and white

139

11:35   1   one, and Micro UAS in that V-247.

11:35   2   MR. SIEGMUND: Mr. Patterson, if we could

11:35   3   go to the next slide, please.

11:35   4   BY MR. SIEGMUND:

11:35   5   Q.   And let's talk about the APT first.

11:35   6   Is that what we're looking at on Slide 5 here?

11:35   7   A.   Yep. That is the APT.

11:35   8   Q.   And can you tell the jury a little bit about

11:35   9   it, please?

11:35   10   A.   Sure. So it's been probably one of the

11:35   11   hardest aircraft I've ever had to explain how they fly,

11:35   12   but it takes off vertically, the way you see it in the

11:35   13   photo, and then as it transitions -- the orange and

11:35   14   white pieces are wings so that entire aircraft rotates

11:35   15   into wing-born flight. So it lays over on its wing and

11:35   16   then it flies like an airplane.

11:35   17   So very unique way of flying, but it allows it

11:35   18   to use considerably less power once it's in that cruise

11:35   19   mode, and it can fly further and faster. It's an

11:36   20   electric aircraft so it's a green technology. We were

11:36   21   developing this to fulfill unmanned logistics missions.

11:36   22   So it was entirely autonomous. It didn't have a pilot

11:36   23   operating the stick and rudder controls.

11:36   24   Q.   And you kind of hit on my next question.

11:36   25   Why did y'all develop this?

11:36   1   A.   So we started out on the innovation team

11:36   2   looking for new and novel products but quickly realized

11:36   3   that this platform had some unique capabilities for

11:36   4   carrying payloads.

11:36   5   We were hearing from commercial entities, as

11:36   6   well as the U.S. government, there was a need for

11:36   7   resupply missions in hard-to-reach locations or

11:36   8   time-sensitive deliveries, and so we started to develop

11:36   9   this product more in line with those use cases.

11:36   10   Q.   And did you take a video from Bell Textron's

11:36   11   website on this particular drone?

11:36   12   A.   Yes.

11:36   13   MR. SIEGMUND: Mr. Patterson, next slide,

11:36   14   please.

11:36   15   (Video played.)

11:36   16   BY MR. SIEGMUND:

11:37   17   Q.   Where was this video filmed, sir?

11:37   18   A.   This was filmed in the Hurst, Texas area.

11:37   19   Q.   And what were y'all doing in this video?

11:37   20   What were you trying to prove?

11:37   21   A.   Yep. So it was -- particularly when it comes

11:37   22   to the commercial market, the integration of these

11:37   23   aircraft into the national aerospace is not a trivial

11:37   24   one, and so we were working with NASA under contract to

11:37   25   demonstrate some methods of properly integrating these

141

11:37   1   aircraft into the airspace.

11:37   2   So that particular flight was a ten-mile

11:37   3   flight loop in the middle of DFW metroplex where we

11:37   4   entered -- coordinated with active air traffic control

11:38   5   at DFW airport, we entered into the approach path,

11:38   6   interacted with real aircraft, airliners in a lot of

11:38   7   instances, and then flew back to our Texas headquarters

11:38   8   and landed.

11:38   9   Fully autonomous flight, fully coordinated.

11:38   10 So it was one of the ways that we were demonstrating

11:38   11 how to properly integrate into the airspace and really

11:38   12 how to do it safely in urban environments which is also

11:38   13 one of the concerns.

11:38   14   Q.   Can you tell the jury a little bit about the

11:38   15 concepts you used to help develop the APT?

11:38   16   A.   Sure. So we listened to the customers use

11:38   17 cases. We began to understand what their needs were,

11:38   18 and then we developed technology roadmaps that first

11:38   19 leveraged a lot of the technology that we developed on

11:38   20 Eagle Eye and then refined them for this use case.

11:38   21   Q.   And at a very high level, what are just some

11:39   22 of the basic features of the APT?

11:39   23   A.   So the aircraft has to be able to autonomously

11:39   24 conduct its missions for a number of different reasons,

11:39   25 but we wanted to reduce the skill set to eliminate

142

11:39   1   human error. So it had to be able to vertically take

11:39   2   off, fly, waypoints and land autonomously, but as part

11:39   3   of that it had to be able to hover autonomously.

11:39   4   And then in future use cases, you know -- all

11:39   5   that initially was land based, but eventually we were

11:39   6   going to be required to do that for offshore customers,

11:39   7   you know, Shell Oil and others like that. So we had to

11:39   8   be prepared for that technology.

11:39   9   Q.   Does the APT currently have the ability to

11:39   10   follow a reference vehicle?

11:39   11   A.   Not currently.

11:39   12   Q.   And why is that?

11:39   13   A.   Because we were initially focused on the use

11:39   14   cases that our land-based customers had. Those were

11:39   15   ones that -- the requirements that were put in front of

11:39   16   us on day one, and so we provisioned for the Follow Me

11:40   17   capabilities, as that would be important for being able

11:40   18   to land on a ship out at sea or land on an oil

11:40   19   platform, and so we needed those capabilities at some

11:40   20   point, but we -- we just architected them in but didn't

11:40   21   actually activate those functions.

11:40   22   Q.   So each of the potential customers for the APT

11:40   23   basically have specific requests. You guys fulfill

11:40   24   those requests?

11:40   25   A.   Yes.

143

11:40   1   Q.   And I think you talked about this briefly.

11:40   2   What are some of the use cases for the APT?

11:40   3   A.   Yep. So commercially they're quite a number,

11:40   4   more than probably even imagined at first. A lot of

11:40   5   medical industry needs in terms of flying blood samples

11:40   6   to laboratories. There's a lot of benefits in terms of

11:40   7   if you get the sample there quicker, the sample's in

11:40   8   better quality. They can make better conclusions from

11:40   9   the test sample.

11:40   10   And some cases there's medical supplies that

11:40   11   are life-limited, and so if you can get those to the

11:41   12   hospitals quicker, they can improve patient care,

11:41   13   reduce costs. So a lot of healthcare industry desires.

11:41   14   There were a lot of what we call last-mile

11:41   15   delivery needs. So companies like Walmart and others

11:41   16   who wanted to deliver goods to people's houses.

11:41   17   There was a military demand for what they call

11:41   18   the tactical resupply. On the tactical resupply you

11:41   19   have soldiers engaged. They needed medicine, you know,

11:41   20   blood, plasma, ammo, food, and we would be able to fly

11:41   21   those supplies out to those, you know, soldiers in

11:41   22   need.

11:41   23   Q.   Who are some of the potential commercial

11:41   24   customers for the APT?

11:41   25   A.   So we spoke to a -- quite a number of them

-144-

11:41	1	over the years. Walmart was interested. It eventually
11:41	2	evolved into a relationship with DroneUp who does a lot
11:41	3	of their operations now.
11:41	4	We've talked to Shell Oil, Army, Marines,
11:42	5	Navy. Canadian Post was one of the ones that we were
11:42	6	surprised about, but quite a number throughout
11:42	7	different industries even, even in the insurance
11:42	8	industry.
11:42	9	Q. What is the current status of the APT?
11:42	10	A. The commercial programs team has taken it over
11:42	11	and they are working with commercial entities to
11:42	12	identify the entry-into-market use case.
11:42	13	Q. All right. Let's talk about the last current
11:42	14	project.
11:42	15	MR. SIEGMUND: Your Honor, can I approach
11:42	16	real quick?
11:42	17	BY MR. SIEGMUND:
11:42	18	Q. Mr. Wittmaak, what are we looking at here?
11:42	19	A. So this is a drone that we call the Micro UAS.
11:42	20	Q. And can you describe briefly what it is to the
11:42	21	jury, please?
11:42	22	A. Sure. So it's a -- what we call a soldier
11:42	23	borne sensor. So an infantry soldier who's out on
11:42	24	patrol has suspicions that there's some enemy or
11:43	25	something over the horizon or beyond the trees that

11:43 1   they can't see. So they would pull this out of their

11:43 2   pack, deploy the aircraft, and it would go gather

11:43 3   intelligence and bring it back to them, and they would

11:43 4   act on that intelligence.

11:43 5   Q.   And did you do any work on this particular

11:43 6   drone?

11:43 7   A.   Yeah. So while I was on the innovation team,

11:43 8   I was a program manager for this and the APT vehicle.

11:43 9   Q.   And why was the Micro UAS developed?

11:43 10   A.   So the Army Research Laboratory approached us

11:43 11   because they had a gap in the market, and they wanted

11:43 12   to see if we could help fill that gap.

11:43 13   Q.   And what need did Bell Textron and the Army

11:43 14   Research lab intend that particular drone to fill?

11:43 15   A.   So, you know, as mentioned, there was a need

11:43 16   for infantry soldiers to have this kind of capability.

11:43 17   It was important to them on the battlefield.

11:43 18   Previously they'd used retail drones that were

11:44 19   available. Those drones were no longer allowed to be

11:44 20   purchased and, therefore, they asked us to enter into

11:44 21   developing this product.

11:44 22   Q.   And why were they no longer allowed to be

11:44 23   purchased off the shelf?

11:44 24   A.   Yep. So the Department of State had issued an

11:44 25   order stating that they could not use any DJI products

11:44 1   or drones manufactured from China because they posed a

11:44 2   security threat.

11:44 3   MR. SIEGMUND: Could we go to the next

11:44 4   slide? Next slide. Sorry. There you go.

11:44 5   BY MR. SIEGMUND:

11:44 6   Q.   And is this what you were talking about, sir?

11:44 7   A.   Yes. That's directly from the Department of

11:44 8   State website as of last week.

11:44 9   Q.   At the top there, what does it say? Just --

11:44 10 just so we're clear and not confusing anybody.

11:44 11   A.   Department of -- department statement on DJI

11:44 12 systems.

11:44 13   Q.   Yeah. And in the black, what does that say?

11:44 14   A.   Oh. U.S. state -- United States Department of

11:44 15 Defense. I'm sorry.

11:44 16   Q.   Yeah. No problem. Just wanted to make sure

11:45 17 we were clear.

11:45 18   And so you guys developed that drone to

11:45 19 fulfill this particular need?

11:45 20   A.   Yes.

11:45 21   Q.   Okay. Has there been any commercial use of

11:45 22 the Micro UAS to date?

11:45 23   A.   Not today.

11:45 24   Q.   And why is that?

11:45 25   A.   We were focused on the Army requirements, them

147

11:45   1   as a customer, and so we didn't pursue any of those

11:45   2   interests at this time.

11:45   3   Q.   Could the Micro UAS be adapted for commercial

11:45   4   use?

11:45   5   A.   Absolutely.

11:45   6   Q.   Let's talk a little bit about competition.

11:45   7   Are you familiar with Bell Textron's major competitors

11:45   8   in the United States UAV market?

11:45   9   A.   Yes, sir.

11:45   10   Q.   And who are some of those?

11:45   11   A.   So there are quite a few. It's a pretty broad

11:45   12   market. DJI's one of them. There are companies called

11:45   13   Zipline, TRV, DroneUp, Wingcopter, just to name a few,

11:45   14   but there are -- there are quite a bit of -- number of

11:45   15   manufacturers out there.

11:45   16   Q.   And you listed DJI. Why DJI?

11:46   17   A.   DJI's come up in a number of conversations

11:46   18   with commercial entities of, you know -- that they have

11:46   19   products that were tested or evaluated and didn't quite

11:46   20   meet their needs.

11:46   21   Q.   Do you have an example of one particular

11:46   22   drone?

11:46   23   A.   Yes. The -- DJI makes an industrial drone.

11:46   24   They market it as an industrial drone called the T-16.

11:46   25   It's designed to carry a payload, and like I said, it's

11:46   1   marketed as an industrial drone.

11:46   2   Q.   Have you noticed a convergence of helicopters

11:46   3   and drones in the market?

11:46   4   A.   Yeah. Absolutely. Drones have began to take

11:46   5   over a lot of helicopter missions. So at one time, you

11:46   6   know, helicopters were inspecting power lines and

11:46   7   pipelines as they crossed the country, and now drones

11:46   8   are starting to conduct those missions.

11:46   9   There are a lot of drones that are conducting

11:46   10 agricultural needs that once were fulfilled with

11:47   11 helicopters, but even further than that, the U.S.

11:47   12 Army -- well, all the Department of Defense

11:47   13 acquisitions, all their manned aircraft are starting to

11:47   14 have requirements for what they call "optionally

11:47   15 piloted." So that means that when there's people on

11:47   16 board, there's a pilot, and that aircraft is flying

11:47   17 like a traditional manned aircraft.

11:47   18   But when they have the need, they can fly that

11:47   19 aircraft autonomously or with a remote pilot somewhere

11:47   20 else. So it would be on an unmanned system at that

11:47   21 point. So really it's a cross capability that blurs

11:47   22 the line between unmanned and manned systems.

11:47   23   Q.   Does Bell Textron have a history of taking

11:47   24 military technology and adapting it for the commercial

11:47   25 market?

149

11:47 1   A.   Yes. The Huey helicopter's a good example of

11:47 2   that. It was developed for the Army during Vietnam.

11:47 3   After the war, it evolved into a commercial product

11:47 4   line which is still being sold today as the Bell 412.

11:48 5   Q.   Thank you, sir.

11:48 6   MR. SIEGMUND: Pass the witness.

11:48 7   CROSS-EXAMINATION

11:48 8   BY MR. SCHROEDER:

11:48 9   Q.   Good morning, Mr. Wittmaak.

11:48 10   A.   Hello.

11:48 11   Q.   I just have a couple of questions for you.

11:48 12 First of all, was the Eagle Eye that you had discussed

11:48 13 in your testimony, was that a helicopter?

11:48 14   A.   No, sir.

11:48 15   Q.   Okay. But it was developed with the Coast

11:48 16 Guard and designed to land on a moving ship; isn't that

11:48 17 correct?

11:48 18   A.   Yeah. One of the use cases was that, yes.

11:48 19   Q.   How many Eagle Eyes were made?

11:48 20   A.   I'm not absolutely certain. I think it was

11:48 21 two aircraft.

11:48 22   Q.   How many are in existence today?

11:48 23   A.   I believe there's one.

11:48 24   Q.   Okay. Where'd the other one go?

11:48 25   A.   I believe it -- it crashed.

11:49   1   Q.   Okay. You spoke briefly about the 525

11:49   2   helicopter. That hasn't been sold yet; isn't that

11:49   3   correct?

11:49   4   A.   That is correct.

11:49   5   Q.   And it's not even certified by the FAA yet;

11:49   6   isn't that correct?

11:49   7   A.   You are correct.

11:49   8   Q.   For the Micro UAS that you discussed, that was

11:49   9   primarily designed for military applications, correct?

11:49   10   A.   We designed it for the Army Research

11:49   11   Laboratory, yes.

11:49   12   Q.   Okay. And you mentioned that it's not

11:49   13   targeted for commercial use; isn't that correct?

11:49   14   A.   Not currently, no.

11:49   15   Q.   Okay. And the Micro UAS, it also could not

11:49   16   follow a reference vehicle, right?

11:49   17   A.   That is correct.

11:49   18   Q.   And Bell Textron has not made any user manuals

11:49   19   or operation manuals for the Micro UAS?

11:49   20   A.   Nothing formal. We would have one for flight

11:50   21   testing purposes.

11:50   22   Q.   Okay. How many Micro UASs were made?

11:50   23   A.   The exact number, I'm not aware of but on the

11:50   24   order of, you know, five to ten.

11:50   25   Q.   Okay. And none of those have been sold; isn't

151

11:50   1   that correct?

11:50   2   A.   That's correct.

11:50   3   Q.   Okay. And you testified that this could --

11:50   4   the Micro UAS could be adopted or adapted for

11:50   5   commercial use, right?

11:50   6   A.   Yes, sir.

11:50   7   Q.   What is Bell waiting on?

11:50   8   A.   Those are business decisions that I'm not

11:50   9   directly privy to. I'm sorry.

11:50   10   Q.   And you listed a number of potential

11:50   11   customers. Let's -- I want to ask you about the APT

11:50   12   now. You listed a number of potential customers for

11:50   13   the APT.

11:50   14   Do you recall that?

11:50   15   A.   Yes, sir.

11:50   16   Q.   And it's your testimony that none of those

11:50   17   customers desired the following function, the ability

11:50   18   for it to follow a reference vehicle, correct?

11:50   19   A.   I don't believe that to be true.

11:50   20   Q.   What's untrue about that?

11:50   21   A.   We had customers that had interest in that

11:51   22   capability.

11:51   23   Q.   But you testified that the APT does not have

11:51   24   that functionality because none of the customers wanted

11:51   25   that functionality.

152

11:51   1   Isn't that what you just testified on direct?

11:51   2   A.   Yes.

11:51   3   Q.   Okay. And would you -- when you were working

11:51   4   on the APT project, were you working as an engineer

11:51   5   that was developing the APT?

11:51   6   A.   So I was the program manager. So while I was

11:51   7   a technical manager, I had limited involvement with the

11:51   8   exact development of the product.

11:51   9   Q.   Okay. But you supervised the engineers who

11:51   10   were doing the development?

11:51   11   A.   Absolutely.

11:51   12   Q.   Did you ever review any of DJI's patents in

11:51   13   the course of your work developing the APT?

11:51   14   A.   Not that I recall.

11:51   15   Q.   Why not?

11:51   16   A.   So typically when we design a new product, we

11:51   17   design them from requirements that we identified -- use

11:51   18   cases that we identified.

11:52   19   In general, patents typically don't provide us

11:52   20   much of what we need to do that, and it would be

11:52   21   infringement if we had.

11:52   22   Q.   Is the APT a helicopter?

11:52   23   A.   No. I would say in -- I would say it doesn't

11:52   24   classify as a helicopter purely.

11:52   25   Q.   Okay. And when did the development of the APT

153

11:52   1   begin?

11:52   2   A.   The exact year, I don't recall, but it

11:52   3   originated with the start of the innovation team. I

11:52   4   don't remember exact year.

11:52   5   Q.   Okay. Do you know approximate?

11:52   6   A.   It was about three or four years ago, probably

11:52   7   closer to four years ago.

11:52   8   Q.   Okay. Thank you.

11:52   9   And how long does it take to make one of

11:52 10   these?

11:52 11   A.   One of these what?

11:52 12   Q.   Sorry. That was a bad question.

11:52 13   How long does it take to make an APT?

11:52 14   A.   So we can usually get one assembled in a

11:53 15   prototype phase in less than three months.

11:53 16   Q.   Okay. So about three months?

11:53 17   A.   Yeah. From scratch.

11:53 18   Q.   Okay. And the price range of the APT, it

11:53 19   ranges from about 250,000 per unit to about 400,000 per

11:53 20   unit; isn't that correct?

11:53 21   A.   Those are some of the prices that we worked up

11:53 22   with our customers. Yes.

11:53 23   Q.   And so there haven't been any APTs developed

11:53 24   in the tens of thousands of dollar price range?

11:53 25   A.   So we didn't really cover it here, but APT is

11:53 1   a family of vehicles of scale. So we have a smaller

11:53 2   variant that we had cost objectives to hit that roughly

11:53 3 $20,000 mark.

11:53 4   Q.   Okay. So about 20,000. Okay.

11:53 5   Have you ever flown an APT?

11:53 6   A.   No, sir.

11:53 7   Q.   You're not a pilot, right?

11:53 8   A.   Correct.

11:53 9   Q.   And none of them have been sold to date?

11:53 10   That's correct?

11:53 11   A.   That is correct. We have not sold any air

11:53 12   frames.

11:53 13   Q.   And how many APTs have been built?

11:54 14   A.   I'd say about nine, approximately, give or

11:54 15   take.

11:54 16   Q.   Okay. And how many exist today?

11:54 17   A.   Three.

11:54 18   Q.   Where are the other six? Have they just been

11:54 19   disassembled or repurposed or what's the...

11:54 20   A.   So sometimes with prototypes they become

11:54 21   obsolete. Sometimes we -- while pushing the envelope

11:54 22   of technology, we damage them. And sometimes they're

11:54 23   just misused or handled improperly and get damaged.

11:54 24   MR. SCHROEDER: And, Your Honor, I do

11:54 25   have a question I'd like to approach the bench on.

155

11:54   1   THE COURT: Please.

11:54   2   (Bench conference.)

11:54   3   MR. SCHROEDER: So I think this is okay

11:54   4   because the MIL that they filed pre-suit was about

11:55   5   helicopter crashes, and the witness testified that the

11:55   6   APT is not a helicopter.

11:55   7   I'd like to ask him if the three in

11:55   8   existence include the one that crashed last month in

11:55   9   Mineral Wells.

11:55   10   THE COURT: Why is that relevant?

11:55   11   MR. SCHROEDER: Because they're touting

11:55   12   their innovation and unmanned aerial vehicles, and they

11:55   13   showed the video on the drone.

11:55   14   THE COURT: This was unmanned?

11:55   15   MR. SCHROEDER: This was unmanned.

11:55   16   Nobody was hurt. The MIL was involving the helicopter

11:55   17   fatalities. This is different.

11:55   18   MR. SIEGMUND: I don't see how it's

11:55   19   relevant, Your Honor.

11:55   20   THE COURT: You can put it in.

11:55   21   MR. SCHROEDER: Thank you.

11:55   22   (Bench conference concludes.)

11:55   23   BY MR. SCHROEDER:

11:55   24   Q.   So, Mr. Wittmaak, you're aware -- or you

11:55   25   testified that there was three APTs in existence

11:55	1	presently.
11:55	2	Is that your testimony?
11:55	3	A. Yeah. To the best of my knowledge. Yeah.
11:55	4	Q. Okay. And were you aware that there was a
11:55	5	crash of an APT last month in Mineral Wells, Texas?
11:56	6	A. Yes.
11:56	7	Q. And so this three, does that include the one
11:56	8	that crashed last month?
11:56	9	A. Yeah. That one is being repaired.
11:56	10	Q. So other than that one, there's only two that
11:56	11	are currently operational?
11:56	12	A. Today, yes.
11:56	13	Q. Okay. And in that crash, the APT was
11:56	14	substantially damaged when it tried to land; isn't that
11:56	15	correct?
11:56	16	A. Yes, sir.
11:56	17	Q. Do you own any DJI drones?
11:56	18	A. No, sir.
11:56	19	Q. Have you ever flown a DJI drone?
11:56	20	A. No.
11:56	21	Q. But you've seen others use DJI drones, haven't
11:56	22	you?
11:56	23	A. Yes, sir.
11:56	24	Q. In fact, Bell uses DJI drones, don't they?
11:56	25	A. There have been instances. Yes.

157

11:56   1   Q.   Bell uses the Mavic Pro, for example, to shoot

11:56   2   videos from the air; isn't that correct?

11:56   3   A.   Yes, sir.

11:56   4   Q.   Bell uses DJI's Mavic Pro when it wants to

11:56   5   capture something from an aerial perspective either in

11:56   6   a video or a picture format; isn't that correct?

11:56   7   A.   We have in the past. Yes.

11:56   8   Q.   Thank you, Mr. Wittmaak.

11:56   9   MR. SCHROEDER: I have no further

11:57 10   questions.

11:57 11   REDIRECT EXAMINATION

11:57 12   BY MR. SIEGMUND:

11:57 13   Q.   Just a few, sir.

11:57 14   Do you remember counsel's discussion of the

11:57 15   APT drone?

11:57 16   A.   Yes, sir.

11:57 17   Q.   And he asked you if it had the ability to

11:57 18   follow a reference vehicle.

11:57 19   Do you remember that?

11:57 20   A.   Yes.

11:57 21   Q.   Is the ability to do that provisioned in that

11:57 22   drone?

11:57 23   A.   Yes. Yes. We recognized that, for instance,

11:57 24   all shipboard operations, we were going to need that

11:57 25   capability. So we provisioned those features into the

11:57 1   drone but didn't implement them initially.

11:57 2   Q.   And we also talked a little bit about sales.

11:57 3   Do you remember that?

11:57 4   A.   Yes.

11:57 5   Q.   And so, first, does Textron have other

11:57 6   business models besides literally selling a drone to a

11:57 7   customer?

11:57 8   A.   Yeah. In a number of different spaces, we've

11:57 9   looked at service-based industry. So where a customer

11:58 10 may not want to own or operate an aircraft, we would

11:58 11 provide that as a service where we would operate the

11:58 12 aircraft for them, and we're providing a flight

11:58 13 service.

11:58 14   Q.   And these two drones we've been talking about,

11:58 15 are those valuable?

11:58 16   A.   Yes.

11:58 17   Q.   Has Textron made money from those drone

11:58 18 products?

11:58 19   A.   Yes. We've generated revenue from just about

11:58 20 every drone product that we've built.

11:58 21   Q.   And does Textron have agreements with other

11:58 22 companies where they're working to commercialize the

11:58 23 drones?

11:58 24   A.   Yes.

11:58 25   Q.   Can you give us just an example?

11:58   1   A.   We developed some legal agreements with

11:58   2   companies like Yomato, basically the FedEx of Japan;

11:58   3   Sumitomo, another Japanese investment company. Those

11:58   4   are two that come to mind.

11:58   5   Q.   Okay. The DJI drone that I guess you saw

11:58   6   someone using, do you remember that conversation?

11:58   7   A.   Yes, sir.

11:58   8   Q.   Was Bell using it for the camera or why were

11:58   9   they using it?

11:59   10   A.   So we didn't have a camera -- so this platform

11:59   11 here, for instance, it has a camera that was designed

11:59   12 specifically for the Army requirements. It doesn't

11:59   13 move. The camera's fixed.

11:59   14   We needed a cinematography drone, a little bit

11:59   15 different requirement set, that had the ability for the

11:59   16 camera to pan around and look in different directions.

11:59   17   So this really wasn't designed for that

11:59   18 operation and, therefore, we didn't -- we just went to

11:59   19 the store and bought something that could do that.

11:59   20   MR. SIEGMUND: Pass the witness. Thank

11:59   21 you.

11:59   22   MR. SCHROEDER: Nothing further,

11:59   23 Your Honor.

11:59   24   THE COURT: Perfect timing. You may step

11:59   25 down, sir.

11:59	1	May he be excused from the rule?
11:59	2	MR. SCHROEDER: Sure. Yes, Your Honor.
11:59	3	THE COURT: You are welcome to stay in
11:59	4	the courtroom after this.
11:59	5	THE WITNESS: Thank you very much.
11:59	6	THE COURT: Ladies and gentlemen of the
11:59	7	jury, we're going to take our lunch recess remembering
11:59	8	the instructions I gave you earlier, if you would,
11:59	9	please.
11:59	10	If you'll be back by 1:15, we will begin
11:59	11	at 1:30.
12:00	12	THE BAILIFF: All rise.
12:00	13	THE COURT: Oh, let me say one more thing
12:00	14	before you go. My plan is to go till around 5:30 or so
12:00	15	today.
12:00	16	Does that cause any of you hardship?
12:00	17	Okay. Thank you.
12:00	18	(Jury exited the courtroom.)
12:00	19	THE COURT: Thank you. You may be
12:00	20	seated.
12:00	21	Is there anything we need to take up
12:00	22	before we take our break?
12:00	23	MR. MEEK: Nothing from plaintiff,
12:00	24	Your Honor.
12:00	25	MR. SCHROEDER: Not from DJI.

12:00   1   THE COURT: We can go off the record for

12:00   2   this.

12:00   3   (Off-the-record discussion.)

12:01   4   THE BAILIFF: All rise.

12:01   5   (Recess taken.)

01:22   6   THE BAILIFF: All rise.

01:22   7   THE COURT: Thank you. You may be

01:22   8   seated.

01:22   9   I'm happy to take up any issues.

01:23   10   MR. HIGH: Your Honor, I think we have a

01:23   11   couple issues relating to some of the deposition

01:23   12   testimony that's set to be played this afternoon.

         13   THE COURT: Okay.

01:23   14   MR. HIGH: So the -- our first objections

01:23   15   relate to some of the testimony designated from

01:23   16   Mr. Zhimeng Shang.

01:23   17   THE COURT: If you'll just hand me the

01:23   18   depositions. Thank you, sir.

01:23   19   Okay. I have the deposition of Zhimeng,

01:23   20   Z-h-i-m-e-n-g, Shang, S-h-a-n-g. If you'll just tell

01:23   21   me what page you're on.

01:23   22   MR. HIGH: Yes, sir. Page 35.

         23   THE COURT: Okay.

01:23   24   MR. HIGH: 10 to 16.

01:23   25   THE COURT: And who is Mr. Shang?

162

01:23   1   MR. HIGH: He's a DJI engineer in the

01:23   2   flight control --

01:23   3   THE COURT: Okay.

01:23   4   MR. HIGH: And specifically it's -- our

01:23   5   objection's more with the second question, but we think

01:23   6   that the two are sort of related. We think that the

01:23   7   "do you understand that DJI's not given us full access

01:24   8   to DJI's flight control code due to export control

01:24   9   restrictions," we think that relates to Your Honor's

01:24   10   MIL against discovery disputes.

01:24   11   THE COURT: Okay. So let's go ahead and

01:24   12   I'll hear from the plaintiff how --

01:24   13   MR. HIGH: So I'm with DJI, Your Honor.

01:24   14   THE COURT: I know. I want to hear from

01:24   15   the plaintiff.

01:24   16   MR. HIGH: Oh. I'm sorry. I

01:24   17   misunderstood you.

01:24   18   THE COURT: In the period over lunch I've

01:24   19   not forgotten who's who. So I occasionally will get

01:24   20   the wrong parties when I say it, but what I care about

01:24   21   here is why it makes a difference to the plaintiff --

01:24   22   why is this question relevant that you ask Mr. Shang?

01:24   23   MR. RICH: Yes, Your Honor. Harrison

01:24   24   Rich for plaintiff.

01:24   25   The question at 35:10 through 12 goes

01:24   1   straight to the credibility of Mr. Shang because he is

01:24   2   the only person in this whole case who has full access

01:24   3   to the flight control code that's at issue, and I think

01:24   4   Mr. High does not really dispute that question.

01:24   5   On the second question, 35:13 through

01:25   6   35:16, that question is entirely consistent with

01:25   7   Your Honor's order that says that the jury will be

01:25   8   instructed that DJI failed to produce its code. And

01:25   9   that's the language from Judge Gilliland's order.

01:25   10   THE COURT: Okay.

01:25   11   MR. RICH: And if Your Honor --

01:25   12   THE COURT: Again, I don't know -- how

01:25   13   has it impacted the plaintiff that DJI did not give you

01:25   14   full access to the flight control code?

01:25   15   MR. RICH: Yes, Your Honor. If I can

01:25   16   just level set on how this all came about.

01:25   17   This is not an export control issue as it

01:25   18   was discussed this morning like -- like in other cases.

01:25   19   This whole issue arose -- on the adverse inference

01:25   20   arose as a sanction for DJI's failure to follow

01:25   21   multiple court orders over a year ago, in

01:25   22   December 2021, when Your Honor told DJI that it needed

01:25   23   to take all steps to get the code out of China.

01:25   24   They didn't do that for a full year, and

01:25   25   that's how this whole instruction came about.

01:26 1   And then our expert, what he'll do -- and

01:26 2   I'm happy to put up the report and show you now, if

01:26 3   Your Honor would like.

01:26 4   THE COURT: Sure.

01:26 5   MR. RICH: Okay. Your Honor, I'm going

01:26 6   to bring up Dr. Michalson, plaintiff's technical

01:26 7   expert's supplemental report that Judge Gilliland

01:26 8   granted us leave to serve.

01:26 9   THE COURT: Okay. And what I'm looking

01:26 10   at now is -- this is Dr. Michalson, M-i-c-h-a-l-s-o-n.

01:26 11   Am I pronouncing it right? Michalson?

01:26 12   MR. RICH: Michalson. Yes, Your Honor.

01:26 13   THE COURT: And --

01:26 14   MR. RICH: May I explain what you're

01:26 15   looking at?

01:26 16   THE COURT: Sure.

01:26 17   MR. RICH: Okay. So this is the

01:26 18   supplemental report. And on Page 9, what Dr. Michalson

01:26 19   is doing on the left-hand side where I've highlighted

01:26 20   Numeral 6, that is the name of the DJI source code

01:26 21   module that was not produced. It's called the attitude

01:26 22   sensing and determination module.

01:27 23   On the right side of the table

01:27 24   Dr. Michalson is talking about the claim limitations

01:27 25   that are at issue in Claim 13. There's something

01:27 1 called a pitch attitude loop.

01:27 2   Now, again, the module that's withheld is

01:27 3 the attitude sensing and determination module. DJI is

01:27 4 going to argue they don't infringe the pitch attitude

01:27 5 loop, and Dr. Michalson's saying that the evidence that

01:27 6 would have showed infringement in this loop, it is

01:27 7 squarely tied to that limitation.

01:27 8   THE COURT: I got it. I got it. I'm

01:27 9 going to overrule the objection made by the defendant

01:27 10 to the testimony on Page 35.

01:27 11   MR. RICH: Thank you, Your Honor.

01:27 12   THE COURT: What else do we have for the

01:27 13 defendant?

01:27 14   MR. HIGH: So the next set of objections

01:27 15 relate to the testimony at -- starting at Page 63,

01:27 16 Line 17.

01:27 17   THE COURT: Okay.

01:27 18   MR. HIGH: And then the -- on the next

01:27 19 page at 64, Line 17, going onto Page 65, Line 4. It's

01:28 20 all related.

01:28 21   And this testimony relates to an

01:28 22 unaccused mode, and so we think this testimony is going

01:28 23 to be confusing to the jurors.

01:28 24   THE COURT: Overruled.

01:28 25   What's next?

01:28 1   MR. HIGH: Okay. And then --

01:28 2   THE COURT: If you all had sat through as

01:28 3 many as I have, and if you think that an argument that

01:28 4 something will confuse the jury because it's on a page

01:28 5 of a deposition that you're going to have read, that's

01:28 6 not a good argument.

01:28 7   MR. HIGH: Okay. Understood.

01:28 8   THE COURT: It -- that would -- what you

01:28 9 just argued will be true to everything that's in this

01:28 10 deposition.

01:28 11   MR. HIGH: And then the -- at the last

01:28 12 set of objections -- I don't have a copy, but we can

01:28 13 pull up the testimony on the screen if you'd like.

01:28 14 It's all related. It relates to the questions of

01:28 15 various DJI engineers and one individual in the

01:28 16 licensing department about their knowledge of the

01:28 17 patents, what they did in -- what they would do in

01:28 18 response to learning of the patents, whether they would

01:28 19 investigate infringement and whether they would make

01:28 20 changes to the product.

01:28 21   THE COURT: I'm going to show my

01:29 22 ignorance here. I just can't remember. Is there a

01:29 23 willfulness claim in this?

01:29 24   MR. HIGH: So the -- Judge Gilliland

01:29 25 granted summary judgment of no pre-suit willfulness.

01:29   1   THE COURT: Right.

01:29   2   MR. HIGH: The post-suit willfulness has

01:29   3   not been --

01:29   4   THE COURT: So -- but your question is a

01:29   5   hypothetical. If they'd had it, what would they have

01:29   6   done?

01:29   7   MR. HIGH: Right. Right. So the

01:29   8   engineers were asked, you know, now that you know about

01:29   9   the patents, are you going to go make changes? Are you

01:29   10   going to find out whether DJI practices the patent?

01:29   11   Things like that.

01:29   12   THE COURT: And why would that not be

01:29   13   relevant -- why would the question of -- if I -- I

01:29   14   don't have it in front of me, but I'm -- so I'm

01:29   15   paraphrasing. Make sure I don't get it wrong.

01:29   16   You've been sued. You're the person -- I

01:29   17   assume these are people who would have the power as

01:29   18   engineers to make changes if they thought there was

01:29   19   infringement?

01:29   20   MR. HIGH: So these aren't patent

01:29   21   attorneys. They are --

01:29   22   THE COURT: No, no. These are engineers,

01:29   23   right?

01:29   24   MR. HIGH: These are engineers.

01:29   25   THE COURT: So the question to them is,

168

01:29   1   you now have -- you are aware that you've been sued on

01:30   2   these patents. You could look at the patents and you

01:30   3   could -- if you thought that we were infringing, you

01:30   4   could design around them.

01:30   5   Is that the tenor of what's being asked?

01:30   6   MR. HIGH: That's -- the tenor of what's

01:30   7   being asked --

01:30   8   THE COURT: It would help me a lot if I

01:30   9   could actually see what people are going to say.

        10   MR. HIGH: Sure. We can pull up

01:30   11   examples.

01:30   12   (Off-the-record discussion.)

01:30   13   THE COURT: Because I'm going to -- I

01:30   14   don't know how to rule unless I know exactly what's --

01:30   15   MR. HIGH: Yeah. This includes some of

01:30   16   the testimony that was on the slides from this morning.

01:30   17   THE COURT: Okay. And what we're going

01:30   18   over here is from the Ai -- A-i, am I pronouncing

01:30   19   that -- Ai?

        20   MR. HIGH: Ai. Yes, sir.

01:30   21   THE COURT: The Ai deposition transcript

01:30   22   at Page 10 through 11. So...

01:30   23   MR. HIGH: So for Mr. Ai, our objections

01:30   24   were relating to do you have an opinions -- an opinion

01:30   25   that the accused products do or do not infringe the

169

01:30   1   patents?

01:30   2   For Mr. Litian Zhang, he was asked

01:31   3   questions about has DJI made any changes to the accused

01:31   4   products --

01:31   5   THE COURT: I'm going to overrule your --

01:31   6   I think all these are relevant.

       7   MR. HIGH: Okay.

01:31   8   THE COURT: On Pages 10, 11, Page 197 and

01:31   9   Page 128, I think it's relevant -- that doesn't mean

01:31 10   I'm going to allow there to be a finding of

01:31 11   willfulness, but I think it's relevant to ask whether

01:31 12   or not their engineers have done anything.

01:31 13   MR. HIGH: Okay. If Your Honor -- one

01:31 14   more issue relating to Mr. Fox Li.

       15   THE COURT: Okay.

01:31 16   MR. HIGH: One question, I think, relates

01:31 17   to issues that kind of get into Your Honor's MIL about

01:31 18   privilege.

01:31 19   THE COURT: Okay.

01:31 20   MR. HIGH: So he was asked: Setting

01:31 21   aside information that came from counsel, has anyone at

01:31 22   DJI ever told you that they don't believe DJI's

01:31 23   products infringed Textron's patents?

01:31 24   THE COURT: Well, I think the part where

01:31 25   they say "setting aside what you discussed with

170

01:31   1   counsel," doesn't that eliminate that problem?

01:31   2   MR. HIGH: So it jumps around the --

01:31   3   THE COURT: Is that the point of him

01:32   4   saying: Other than discussion with counsel, have you

01:32   5   done any non-privileged... That's the way I interpret

01:32   6   that. That's the way I would have asked that question.

01:32   7   MR. HIGH: Okay.

01:32   8   THE COURT: If I wanted non-privileged

01:32   9   communication.

01:32   10   MR. HIGH: Understood.

01:32   11   THE COURT: So I'm going to overrule your

01:32   12   objection to that.

01:32   13   MR. HIGH: Okay. Thank you.

01:32   14   THE COURT: Anything else?

01:32   15   MR. HIGH: No, Your Honor.

01:32   16   THE COURT: Okay. We're going to --

01:32   17   we'll get them organized, and we'll be back in a minute

01:32   18   or two.

01:32   19   THE BAILIFF: All rise.

01:32   20   (Recess taken.)

01:34   21   THE BAILIFF: All rise.

01:34   22   THE COURT: Please remain standing for

01:34   23   the jury.

01:34   24   (Jury entered the courtroom.)

01:34   25   THE COURT: Thank you. You may be

171

01:34   1   seated.

01:34   2   Counsel, you may call your next witness,

01:34   3   please.

01:34   4   MR. RICH: The plaintiff calls Mr. James

01:34   5   Harris.

01:34   6   (The witness was sworn.)

01:35   7   MR. RICH: Your Honor, may I have

01:35   8   permission to approach the witness with the binder?

01:35   9   THE COURT: Of course.

01:35   10   DIRECT EXAMINATION

01:35   11 BY MR. RICH:

01:35   12   Q.   Good afternoon, Mr. Harris.

01:35   13   A.   Good afternoon.

01:35   14   Q.   Can you please state your name?

01:35   15   A.   My name is James E. Harris.

01:35   16   Q.   Where were you born, Mr. Harris?

01:35   17   A.   I was born in Corpus Christi, Texas.

01:35   18   Q.   How long have you lived in Texas?

01:35   19   A.   Aside from some assignments outside the state,

01:35   20 I've lived here all my life.

01:35   21   Q.   Where do you currently live?

01:35   22   A.   I live in Dalworthington Gardens, Texas, which

01:36   23 is in the Dallas/Fort Worth area.

01:36   24   Q.   Can you tell the jury a little bit about

01:36   25 yourself?

172

01:36   1   A.   Sure. I'm married. We have three boys; one's

01:36   2   36, one's 33 and the other one turns 27 today.

01:36   3   Q.   What are you doing in your spare time now?

01:36   4   A.   I'm retired and I am loving it. Highly

01:36   5   recommend it. I have hobbies. I'm a musician. I play

01:36   6   bass with my wife who's a fine pianist. I do

01:36   7   woodworking. I enjoy home projects, remodeling,

01:36   8   building furniture. And when I can't come up with an

01:36   9   excuse, I work in the yard.

01:36   10   Q.   Mr. Harris, can you please tell the jury why

01:36   11 you're here today?

01:36   12   A.   I'm here to testify regarding one of my

01:36   13 patents.

01:36   14   Q.   Now, you have a document that's marked

01:36   15 Plaintiff's Exhibit No. 2 in front of you?

01:36   16   A.   Yes.

01:36   17   Q.   Can you tell the jury what that document is?

01:36   18   A.   This is a certified copy of the patent that

01:36   19 we're talking about today.

01:36   20   Q.   Before we dive into your invention,

01:37   21 Mr. Harris, let's talk a little bit about your

01:37   22 engineering background.

01:37   23   Where did you go to college?

01:37   24   A.   Down the road at Texas A&M University. In

01:37   25 1980, I received a bachelor's degree in electrical

01:37   1   engineering, worked for a few years and then went back

01:37   2   to graduate school for 18 months. And in 1985, I

01:37   3   received a master's in engineering degree in electrical

01:37   4   engineering.

01:37   5   Q.   Did you receive any awards while you were at

01:37   6   A&M?

01:37   7   A.   I did. In 1980, my senior year as an

01:37   8   undergraduate, I received the Frank Bolton award for

01:37   9   outstanding electrical engineering student.

01:37   10   Q.   When did you start working at Bell Textron?

01:37   11   A.   June 2nd, 1980.

01:37   12   Q.   How long did you work at Bell Textron?

01:37   13   A.   Until March 1st of 2013, with a short -- like

01:37   14   I said, to go to graduate school, I was gone 18 months,

01:37   15   and then I had a short time that I worked for Honeywell

01:37   16   on the Boeing 777 out in Phoenix.

01:38   17   Q.   About how many years does that add up at Bell

01:38   18   Textron?

01:38   19   A.   Minus the absences, 33 years.

01:38   20   Q.   What positions did you hold at Bell Textron?

01:38   21   A.   Well, as an undergraduate-degreed person, I

01:38   22   started as an associate engineer, and then through a

01:38   23   series of promotions in the early 2000s, I was a staff

01:38   24   engineer which at the time was the highest rank.

01:38   25   And at that time, the company decided to

01:38   1   create another engineering rank above that called

01:38   2   "senior staff engineer," not a very creative term, and

01:38   3   they made 12 of us.

01:38   4   Q.   Is senior staff engineer at that time one of

01:38   5   the highest or the highest technical rank at the

01:38   6   company?

01:38   7   A.   It was while I was working there. Yes.

01:38   8   Q.   Can you tell the jury about some of the

01:38   9   aircraft that you worked on at Bell Textron?

01:38   10   A.   Sure. First thing I worked on was an ongoing

01:38   11   program when I came to Bell called the 214 Super

01:38   12   Transport. It's an 18-passenger civilian aircraft

01:39   13   mainly used to take people to and from oil rigs and

01:39   14   that sort of thing.

01:39   15   Then I worked on a series of demonstration

01:39   16   programs, including the first four-bladed rotor to be

01:39   17   put on an old Cobra aircraft. That later was fielded

01:39   18   in a four-blade configuration.

01:39   19   And I worked on the Eagle Eye, which we'll

01:39   20   talk more about today, and then I worked on a series of

01:39   21   civilian aircraft culminating in the 407 just before I

01:39   22   left.

01:39   23   Q.   How many total patents are you a named

01:39   24   inventor on?

01:39   25   A.   I have six patents; five have issued and one

175

01:39 1   is still pending.

01:39 2   Q.   Can you tell the jury, what was Eagle Eye?

01:39 3   A.   Eagle Eye was the name we gave to an unmanned

01:39 4   aircraft system. It's a tilt -- the airplane itself is

01:39 5   a 3,000-pound tilt-rotor, and it -- the system includes

01:39 6   data link and a ground station, essentially a cockpit

01:40 7   on the ground.

01:40 8   Q.   Now, is this model a model of the Eagle Eye?

01:40 9   A.   It is.

01:40 10   Q.   And --

01:40 11   A.   I wish I had one.

01:40 12   Q.   You worked on the real thing?

01:40 13   A.   I did.

01:40 14   Q.   Okay.

01:40 15   A.   Can I have that one, sir?

01:40 16   (Laughter.)

01:40 17   BY MR. RICH:

01:40 18   Q.   You'll have to ask permission from the folks

01:40 19   back there.

01:40 20   A.   Okay.

01:40 21   Q.   All right. When did Bell Textron start

01:40 22   working on Eagle Eye?

01:40 23   A.   About 1992.

01:40 24   Q.   What did Bell bring to the unmanned aerial

01:40 25   vehicle industry around '92?

01:40   1   A.   Well, when we entered the fray, so to speak, I

01:40   2   would say that the state of the art at that time was --

01:40   3   the fielded systems were, generally speaking, glorified

01:40   4   hobby aircraft. They were typically not reliable.

01:40   5   They certainly didn't have a manned-aircraft mentality

01:40   6   to the design.

01:40   7   So we brought that rich history of reliability

01:40   8   and discipline to the design process, I think, at the

01:41   9   time we entered and started working on Eagle Eye.

01:41   10   Q.   What were some of the cool things that Eagle

01:41   11   Eye could do in the early to mid 1990s?

01:41   12   A.   Well, if you go up to 1998, the testing we had

01:41   13   completed by then, the aircraft could, all by itself,

01:41   14   fly -- vertical takeoffs and landings. It could fly to

01:41   15   waypoints. By "waypoint," I mean a spot over the

01:41   16   ground. You simply tell the aircraft go to that spot,

01:41   17   and it would go there or a series of waypoints,

01:41   18   otherwise known as a flight plan, just like an airliner

01:41   19   taking you or I to LaGuardia Airport.

01:41   20   We could do all those things without a pilot,

01:41   21   just someone operating the aircraft from the ground

01:41   22   station, we called it, the cockpit on the ground.

01:41   23   Q.   Could the Eagle Eye fly high, fast and far?

01:41   24   A.   Yes. In fact, that's what we used to say is

01:41   25   you just tell it how high, how fast and where you want

177

01:41   1   to go.

01:42   2   Q.   How did y'all know the Eagle Eye could do

01:42   3   those things in the 1990s?

01:42   4   A.   Through a series of flight tests.

01:42   5   Q.   How does your invention in the '909 patent

01:42   6   that's Plaintiff's Exhibit 2, how does that relate to

01:42   7   Eagle Eye?

01:42   8   A.   Well, it grew out of our work on Eagle Eye.

01:42   9   Q.   What work on Eagle Eye led to your invention?

01:42   10   A.   We created a mode that we called the "relative

01:42   11 inertial velocity mode," and that -- that was what this

01:42   12 invention is about.

01:42   13   Q.   Is there an acronym that you use to refer to

01:42   14 relative inertial velocity mode?

01:42   15   A.   Yeah. Without thinking, I call it RIV and

01:42   16 think that everybody knows what I mean.

01:42   17   Q.   What happened in 1998 that led to your RIV

01:42   18 mode invention?

01:42   19   A.   Okay. So following the tests in 1998 where

01:42   20 the aircraft had demonstrated the capabilities I just

01:42   21 described, the Navy was impressed with the aircraft.

01:43   22 They wanted a vertical takeoff and landing aircraft

01:43   23 that could deploy from and recover to a ship at sea,

01:43   24 and they did not want to have to have a skilled pilot

01:43   25 have to do that.

01:43   1   So they wanted something that could land

01:43   2   autonomously on the back of a pitching, rolling ship at

01:43   3   sea.

01:43   4   Q.   So the Navy approached Bell with the problem?

01:43   5   A.   They did.

01:43   6   Q.   How was the Navy landing UAVs on the ship when

01:43   7   they came to Bell?

01:43   8   A.   The only fielded system that I personally am

01:43   9   aware of at that time was called the "Pioneer System,"

01:43 10   and it was deployed and -- out on ships.

01:43 11   But to -- it was a fixed-wing aircraft,

01:43 12   meaning an airplane, and could not land vertically. So

01:43 13   they recovered it to the ships by putting -- erecting a

01:43 14   goalpost with a net. And the airplane had to be flown

01:43 15   into the net, typically causing at least some minor

01:43 16   damage or worse in some cases.

01:44 17   Q.   Who at Bell was tasked with solving the Navy's

01:44 18   problem?

01:44 19   A.   The team that had completed the '98 testing I

01:44 20   described.

01:44 21   Q.   Were you a part of that team?

01:44 22   A.   Yes.

01:44 23   Q.   Along with your co-inventors?

01:44 24   A.   All of us were -- had been part of that

01:44 25   previous work.

01:44 1   Q.   Are your co-inventors listed on the cover of

01:44 2   your '909 patent?

01:44 3   A.   They are.

01:44 4   MR. RICH: Mr. Patterson, may I have

01:44 5   JX-2, please?

01:44 6   BY MR. RICH:

01:45 7   Q.   Mr. Harris, can you tell the jury a little bit

01:45 8   about your co-inventors that are listed on the cover of

01:45 9   your patents?

01:45 10   A.   Sure. Ken Builta was a gray beard at the

01:45 11 company, a senior engineer when I came to work there.

01:45 12 One of my mentors, a super idea guy. And then my -- my

01:45 13 name's listed.

01:45 14   Bryan Honza is a talented electronics engineer

01:45 15 who designed some of the flight control computer

01:45 16 hardware and did the human computer interface for

01:45 17 the -- for this invention.

01:45 18   Jeff Epp is a control laws guy. By "control

01:45 19 law," I mean the algorithm by which the aircraft does

01:45 20 what it's supposed to do.

01:45 21   And then Kynn Schulte, another electrical

01:45 22 engineer who, besides being a hardware designer, would

01:46 23 take the control laws I just talked about and implement

01:46 24 them in software.

01:46 25   And one final thing that was very critical

01:46   1   that Kynn did was he was the guy that created the

01:46   2   redundancy management and fault tolerance of the

01:46   3   aircraft; in other words, airplane's flying along and

01:46   4   one of the sensors fails, how do you reconfigure and

01:46   5   continue to fly without falling out of the sky?

01:46   6   Q.   What was your role on that team, Mr. Harris?

01:46   7   A.   Well, initially, myself and Ken Builta

01:46   8   brainstormed the idea and then brought some of the

01:46   9   others in.

01:46   10   But I also became the overarching coordinator

01:46   11 for all aspects of the system from the concept to the

01:46   12 user interface, to the data link, to the flight control

01:46   13 computer, which we designed and built also, and finally

01:46   14 for flight testing.

01:46   15   Q.   Now, what was you all's solution to the Navy's

01:46   16 problem?

01:46   17   A.   Well, like I said, the relative inertial

01:46   18 velocity mode was used to do basically three things to

01:47   19 solve the Navy's problem.

01:47   20   First of all, you're 100 miles away doing

01:47   21 something with the aircraft. You have to rendezvous

01:47   22 with the ship. The ship is not a fixed point on the

01:47   23 earth. It's moving. So being able to do that with a

01:47   24 click of a button, to say I need to come back to the

01:47   25 ship which is moving, is one of the problems that it

181

01:47   1   solved.

01:47   2   And secondly, once you rendezvous with the

01:47   3   ship, you want to follow that ship until the captain

01:47   4   gets permission to do a landing, and then you want to

01:47   5   land automatically without any intervention necessary

01:47   6   on the part of the operator.

01:47   7   So those three things.

01:47   8   Q.   Now, what is station-keeping?

01:47   9   A.   Oh, yeah. Station-keeping is when I said

01:47   10   you're following the ship. That's the term they give.

01:47   11   It basically means you're matching course and speed,

01:47   12   following the ship, mimicking its movement and waiting

01:47   13   your turn to be -- to land.

01:47   14   Q.   What would you say is one of the key aspects

01:48   15   of your invention?

01:48   16   A.   To me the key is the fact that these tasks

01:48   17   we're talking about typically take a very experienced

01:48   18   and very capable pilot, and the idea behind this was to

01:48   19   not have that highly-trained pilot have to do this but

01:48   20   to have somebody who had training, obviously, but

01:48   21   didn't have to have all those piloting skills to

01:48   22   operate the vehicle. Push a button, bring it home.

01:48   23   Push another button, ask it to land.

01:48   24   Q.   Why was it so important to make it easy for an

01:48   25   unskilled operator to fly the drone?

01:48 1   A.   Well, in the military or the civilian world,

01:48 2 pilot training is very expensive, and we could train an

01:48 3 operator to do these tasks with a highly capable system

01:48 4 for much cheaper. That's one.

01:48 5   Second is when you have an aircraft that flies

01:48 6 itself and takes care of itself, you're less likely to

01:49 7 make the kind of mistake that could lead to an

01:49 8 incident.

01:49 9   Q.   Did you intend to limit your invention to just

01:49 10 following and landing on a ship?

01:49 11   A.   No. One of the applications that immediately

01:49 12 came to mind was formation flying. The reference

01:49 13 vehicle, as we call it, could be a ship, could be

01:49 14 another aircraft. So it could be flying formation with

01:49 15 another aircraft.

01:49 16   Q.   Could it be any type of vehicle?

01:49 17   A.   Any type of vehicle.

01:49 18   Q.   How did your team prove that RIV mode would

01:49 19 work?

01:49 20   A.   Again, through a series of flight tests.

01:49 21   Q.   When did Bell flight test the Eagle Eye RIV

01:49 22 mode?

01:49 23   A.   Those tests were conducted between January and

01:49 24 April of 2000.

01:49 25   Q.   Where did Bell flight test the Eagle Eye RIV

01:49 1   mode?

01:49 2   A.   At a facility known as the Yuma Proving

01:49 3   Ground.

01:49 4   Q.   What is Yuma Proving Grounds?

01:49 5   A.   It's an Army facility between Yuma and

01:49 6   Quartzsite, Arizona. I don't know the exact size,

01:50 7   maybe a million acres. It's out in the middle of

01:50 8   nowhere, and it has facilities enough that even the

01:50 9   Navy will bring their unmanned system out there to

01:50 10   demonstrate.

01:50 11   Q.   How long did y'all spend out at Yuma?

01:50 12   A.   Well, that time it was about four months.

01:50 13   Q.   Now, when y'all are out in Yuma working on RIV

01:50 14   mode for four months, where were your families?

01:50 15   A.   Back here in Texas.

01:50 16   Q.   How did the flight tests go?

01:50 17   A.   Went very well. I just want to say that the

01:50 18   automatic landings we did, every one of them landed

01:50 19   within two feet of the intended touchdown spot.

01:50 20   Q.   Did your team take any videos of the RIV mode

01:50 21   flight tests out at Yuma?

01:50 22   A.   Yes.

01:50 23   MR. RICH: Now, Mr. Patterson, may I have

01:50 24   Plaintiff's Exhibit 443?

01:51 25   (Off-the-record discussion.)

184

01:51   1   MR. RICH: May I have Plaintiff's

01:51   2   Exhibit 443, please?

01:51   3   BY MR. RICH:

01:51   4   Q.   Do you recognize Plaintiff's Exhibit 443,

01:51   5   Mr. Harris?

01:51   6   A.   Yes. This is a shortened version of some of

01:51   7   the flight test activities in Yuma.

01:52   8   Q.   Were you present at the flight test where this

01:52   9   video was recorded?

01:52   10   A.   I was.

01:52   11   Q.   Did you see the events depicted in this flight

01:52   12   test?

01:52   13   A.   Yes.

01:52   14   Q.   Is the video a true and accurate depiction of

01:52   15   the flight test?

01:52   16   A.   Yes. It is. I believe so.

01:52   17   MR. RICH: Plaintiff moves to admit

01:52   18   Plaintiff's Exhibit 443 into evidence.

01:52   19   MR. YIN: No objection.

01:52   20   THE COURT: It'll be admitted.

        21   BY MR. RICH:

01:52   22   Q.   Would you like to play the video for the jury,

01:52   23   Mr. Harris?

01:52   24   A.   Certainly would. It's only about a minute.

        25   MR. RICH: All right. Let's please play

185

01:52   1   the video.

01:52   2   BY MR. RICH:

01:52   3   Q.   Is that you, Mr. Harris?

01:52   4   A.   Yeah. That's a much younger, skinnier version

01:52   5   of me, yes.

01:52   6   Q.   Thank you.

01:52   7   MR. RICH: Can you please play the video?

01:52   8   (Video played.)

01:52   9   BY MR. RICH:

01:52 10   Q.   Mr. Harris, can you narrate this video for us?

01:52 11   A.   At this point what I'm doing is utilizing the

01:52 12   command at the bottom of a user interface to use the

01:52 13   RIV mode to bring the aircraft into an area of the sky

01:52 14   called the acquisition window where the sensor --

01:53 15   (Clarification by Reporter.)

01:53 16   A.   It's already in the auto land mode.

01:53 17   BY MR. RICH:

01:53 18   Q.   Now you can continue, Mr. Harris.

01:53 19   A.   Yeah. So we are in the auto land mode at this

01:53 20   point, and that vehicle has -- it's hands off. I'm not

01:53 21   doing anything in the ground station at this point.

01:53 22   The aircraft is following the glide slope, coming down,

01:53 23   leveling off and ultimately will be approaching the

01:53 24   touchdown point, which is -- that's a pretend ship in

01:53 25   the desert. There's a designated spot that would

01:53   1   represent the intended touchdown point.

01:53   2   MR. RICH: Okay. Let's finish the video,

01:53   3   please.

01:53   4   (Video played.)

01:53   5   A.   So once it reaches the touchdown point, it

01:53   6   stays there until it's given authority to land. You

01:53   7   have to clear it with the captain before you bring

01:53   8   anything aboard the ship.

01:54   9   And I'll reiterate that what you're seeing is

01:54   10   completely hands off. You can see the windsock. It

01:54   11   was not a calm day.

01:54   12   BY MR. RICH:

01:54   13   Q.   Mr. Harris, what happened to Eagle Eye?

01:54   14   A.   Following this successful demonstration of

01:54   15   auto land, the Navy chose a less expensive aircraft for

01:54   16   the follow-on program for the production program.

01:54   17   Q.   Did that aircraft have the same capabilities

01:54   18   as Eagle Eye?

01:54   19   A.   No. It didn't, but it was cheaper.

01:54   20   Q.   Where is Eagle Eye nowadays?

01:54   21   A.   The aircraft you see in the video is in a

01:54   22   museum at Patuxent River Naval Air Station in southern

01:54   23   Maryland.

01:54   24   Q.   Are there any competitions within the Textron

01:54   25   family of companies for awards for innovations?

01:54 1   A.   There is.

01:54 2   Q.   What's the name of one of those awards?

01:54 3   A.   Well, the most prestigious is called the

01:54 4 Chairman's Award For Innovation. At least when I was

01:54 5 working there ten years ago, that was the name of it.

01:55 6   Q.   How hard is it to win the Textron Chairman's

01:55 7 Award?

01:55 8   A.   It's difficult because you must first -- your

01:55 9 innovation must be nominated at the local level. By

01:55 10 that, I mean within Bell. And meanwhile the same

01:55 11 thing's going on at all the other Textron divisions,

01:55 12 Cessna and all the other divisions.

01:55 13   Once winners are selected from the other

01:55 14 divisions, those are put forth to the Textron level

01:55 15 where a committee decides the winners at that level.

01:55 16   Q.   How did your team fair in that competition for

01:55 17 the Textron Chairman's Award?

01:55 18   A.   We won it that year.

01:55 19   MR. RICH: May I have Plaintiff's

01:55 20 Exhibit 446, please?

01:55 21 BY MR. RICH:

01:55 22   Q.   Mr. Harris, do you recognize Plaintiff's

01:55 23 Exhibit 446?

01:55 24   A.   Yes. That's the nomination form used to enter

01:55 25 those competitions I spoke of.

01:55   1   MR. RICH: We move to admit Plaintiff's

01:55   2   Exhibit 446 into evidence.

01:56   3   MR. YIN: No objection.

01:56   4   THE COURT: Admitted.

01:56   5   MR. RICH: May I have Page 5 of

01:56   6   Plaintiff's Exhibit 446.

01:56   7   BY MR. RICH:

01:56   8   Q.   Mr. Harris, whose name is listed as the

01:56   9   applicant on this page?

01:56   10   A.   Myself.

01:56   11   MR. RICH: May I have Page 2, please, of

01:56   12   Plaintiff's Exhibit 446?

01:56   13   BY MR. RICH:

01:56   14   Q.   Now, earlier we talked about one of the

01:56   15   objectives being ease of use. Is there anything in

01:56   16   this document on this page that confirms that your team

01:56   17   satisfied that objective?

01:56   18   A.   The very first item on the importance of the

01:56   19   invention is that it eliminates the need for a highly

01:56   20   skilled operator.

01:56   21   Q.   What future uses did you think RIV mode would

01:56   22   have?

01:56   23   A.   Personally I could envision a lot of uses.

01:56   24   Besides what we just described of landing on a naval

01:56   25   ship, there's many Coast Guard missions it could help

01:57   1   with. There's even -- I even conceived of the idea of

01:57   2   a manned aircraft where you have a single-pilot

01:57   3   aircraft and that pilot becomes incapacitated. It

01:57   4   could be used as a emergency panic button "go home/take

01:57   5   me home" mode for someone who's had a heart attack or

01:57   6   something.

01:57   7   MR. RICH: May I have Page 9 of

01:57   8   Plaintiff's Exhibit 446, please?

01:57   9   BY MR. RICH:

01:57   10   Q.   Mr. Harris, is there anything on this slide

01:57   11   that confirms whether you thought your invention would

01:57   12   in the future apply to unmanned commercial aircraft?

01:57   13   A.   Yeah. In the lower right corner of this quad

01:57   14   chart the last sentence says: This concept can be

01:57   15   applied to both manned and unmanned vehicles.

01:57   16   Q.   And does that say anything about commercial

01:57   17   aircraft programs?

01:57   18   A.   Yeah. Commercial and military and certainly

01:57   19   beyond helicopters or tilt-rotors.

01:57   20   Q.   Mr. Harris, when did the application that led

01:58   21   to the '909 patent get filed?

01:58   22   A.   I believe it was 2004 when it was filed. Yes.

01:58   23   Q.   How many years did it take for the examiners

01:58   24   at the Patent Office to review your application before

01:58   25   deciding to award you and your co-inventors the '909

01:58   1   patent?

01:58   2   A.   Looks like seven. It issued in September of

01:58   3   2011. So about seven years.

01:58   4   MR. RICH: May I have Joint Exhibit 2,

01:58   5   please?

01:58   6   BY MR. RICH:

01:58   7   Q.   On the first page of your '909 patent there's

01:58   8   a section titled "Abstract."

01:58   9   Can you tell the jury what the abstract is?

01:58   10   A.   Well, the abstract is simply an overview,

01:58   11 broad-level overview, of the invention and gives, like,

01:58   12 one example of how it might be used.

01:58   13   Q.   If the abstract is a broad-level overview, is

01:58   14 there a place where the legal definitions of your

01:58   15 inventions are in the patent?

01:58   16   A.   Yes. Towards the end of the patent the claims

01:59   17 are listed. It would be on Column 8, looks like.

01:59   18 Yeah, that's it. About halfway down: The invention

01:59   19 claimed is...

01:59   20   And from that point on are the legal claims.

01:59   21   Q.   Who writes claims like the ones shown on this

01:59   22 screen?

01:59   23   A.   They're written by the patent attorney that

01:59   24 Bell hired to file the paperwork after consultation and

01:59   25 working with the inventors.

01:59   1   Q.   Are you --

01:59   2   A.   And then we reviewed them to make sure they

01:59   3   captured the invention.

01:59   4   Q.   Are you, yourself, a patent attorney?

01:59   5   A.   No.

01:59   6   Q.   Are these the claims that the United States

01:59   7   Patent Office reviewed and approved after seven years?

01:59   8   A.   Yes.

01:59   9   Q.   Can you please turn to Page 9 of your patent?

01:59   10   You should see a section titled "Description

01:59   11   of the Preferred Embodiment."

01:59   12   A.   Yep. I can find that. In Column 1.

02:00   13   Q.   What is the section titled "Description of the

02:00   14   Preferred Embodiment"?

02:00   15   A.   It's basically -- following the abstract,

02:00   16   you're going to -- you give the reader more examples of

02:00   17   how the invention can be utilized and how it can be

02:00   18   instantiated or applied and -- but it was never

02:00   19   intended or it isn't intended to be limiting, but it

02:00   20   gives the reader something else to go on to understand

02:00   21   the invention.

02:00   22   Q.   Where are the figures in your patent?

02:00   23   A.   They're actually before this section, and then

02:00   24   this section refers to the figures.

02:00   25   Q.   And what do the figures show?

02:00   1   A.   Well, if you were just reading the words, it's

02:00   2   sometimes difficult to visualize what the words are

02:00   3   talking about. So it refers to the figures in order to

02:00   4   give the reader a little more insight into what's being

02:01   5   said.

02:01   6   Q.   Did you make it clear anywhere in your patent

02:01   7   that your patent was not limited to the examples in the

02:01   8   figures and description of your patent?

02:01   9   A.   Yes. When you get to the end of the section,

02:01   10   it states that. So that would be, again, Column 8

02:01   11   right before the claims. Just let me get there. It's

02:01   12   the Line 29 and beyond.

02:01   13   Q.   Are you looking at Column 8, Lines --

02:01   14   (Simultaneous conversation.)

02:01   15   A.   Yeah. It says: While this invention has been

02:01   16   described with reference to illustrative embodiments,

02:01   17   this description is not intended to be construed in a

02:01   18   limiting sense. Various modifications and combinations

02:01   19   of the illustrative embodiments, as well as other

02:01   20   embodiments of the invention, will be apparent to

02:01   21   persons skilled in the art upon reference to this

02:01   22   description.

02:01   23   BY MR. RICH:

02:01   24   Q.   May I direct your attention to Column 6,

02:02   25   Lines 9 --

193

02:02 1   A.   Sure.

02:02 2   Q.   -- through 10?

02:02 3   A.   Yeah. I see it.

02:02 4   Q.   Did you mention station-keeping anywhere in

02:02 5   your patent?

02:02 6   A.   Yeah. This section is describing user

02:02 7   interaction with the system and pointing out that the

02:02 8   user can -- one of the ways that a user can interact

02:02 9   with the system is to tell the aircraft what relative

02:02 10 speed it wants to go to the reference vehicle. And it

02:02 11 points out that a zero relative speed is, in fact,

02:02 12 station-keeping.

02:02 13   Q.   What is relative velocity?

02:02 14   A.   Relative velocity is the velocity of one

02:02 15 object relative to another.

02:02 16   Q.   Are there multiple ways to calculate a

02:02 17 relative velocity?

02:02 18   A.   Yes.

02:02 19   Q.   Could you subtract one velocity from another

02:02 20 to get a relative velocity?

02:02 21   A.   That's certainly one way. Yes.

02:02 22   Q.   Is another way to do a calculation that

02:03 23 involves matching one velocity to another?

02:03 24   A.   Certainly. In the case of station-keeping,

02:03 25 you don't have to take the difference or take a

194

02:03   1   subtraction. You can match it to the other one and

02:03   2   command the aircraft to do what the other vehicle -- if

02:03   3   you're station-keeping with another vehicle.

02:03   4   Q.   Did you intend to limit your patent to one

02:03   5   versus the other?

02:03   6   A.   No.

02:03   7   Q.   Your patent references a selected velocity and

02:03   8   a selected position.

02:03   9   How can a velocity or position be selected?

02:03   10   A.   I mean, several ways. One is, as I mentioned

02:03   11 here -- as is mentioned in this paragraph we were just

02:03   12 reading, the operator can command a relative speed.

02:03   13 And that's one way to do it.

02:03   14   Another way would be for the aircraft in

02:03   15 certain modes, like auto-land I mentioned, the

02:03   16 operator's not asking for a given relative speed. The

02:04   17 airplane is managing its own relative speed. So it's

02:04   18 calculating the selected velocity. As it gets closer

02:04   19 to the touchdown point, it's slowing down.

02:04   20   Q.   And is that like an algorithm that's in the

02:04   21 drone itself?

02:04   22   A.   It's programmed into the aircraft. Yes.

02:04   23   Q.   Now, your patent references communicating

02:04   24 position and movement data.

02:04   25   How can that be done?

02:04 1   A.   In a number of ways, the simplest of which is

02:04 2   to have the position of the target vehicle, in this

02:04 3   case a ship, in my example, send its position

02:04 4   periodically to the aircraft. That's one way. And

02:04 5   then the aircraft can figure out what the motion is

02:04 6   based on the position or series of positions.

02:04 7   Another way would be to have a sensor on the

02:04 8   ship, for example. Every ship -- most big capable

02:04 9   ships and certainly every Navy ship knows how fast it's

02:04 10   going. So that data could be sent directly.

02:04 11   Q.   Did you intend to limit your patent to one way

02:04 12   versus the other?

02:04 13   A.   No.

02:04 14   Q.   Is there an analogy you could give to explain

02:05 15   how you can get movement from position?

02:05 16   A.   Sure. If I leave my home in Fort Worth at

02:05 17   noon and I text you that I'm in Fort Worth now, and

02:05 18   then an hour later, at 1 o'clock, I text you again to

02:05 19   say I'm in Waco, then I didn't send you any velocity

02:05 20   information or any speed information, but you can infer

02:05 21   that -- two things, clearly I moved and clearly I

02:05 22   violated the speed limit.

02:05 23   (Laughter.)

02:05 24   BY MR. RICH:

02:05 25   Q.   You and me both.

02:05   1   Does your patent describe any benefits of your

02:05   2   invention?

02:05   3   A.   It does. I believe it's back to the old

02:05   4   Column 8, right before the claims, near the top of that

02:05   5   column. Well, the second paragraph of that column. So

02:05   6   Line -- 10, 11, 12 -- 13.

02:05   7   Q.   May I direct your attention to Column 8,

02:06   8   Lines 13 through 28?

02:06   9   A.   So that whole paragraph describes a few of the

02:06   10 advantages.

02:06   11   Q.   Is there a particular advantage that you'd

02:06   12 like to tell the jury about?

02:06   13   A.   My favorite that I've already discussed is

02:06   14 listed as No. 2 here, the ease of control of the

02:06   15 aircraft without having to have piloting skills.

02:06   16   Q.   Now, you weren't in here earlier, but there

02:06   17 was some discussion about a crash of the Eagle Eye.

02:06   18   A.   Yes.

02:06   19   Q.   Was the Eagle Eye an experimental aircraft?

02:06   20   A.   Yes. It was.

02:06   21   Q.   Have you ever heard of a mishap with an

02:06   22 experimental aircraft?

02:06   23   A.   It's happened several times in the course of

02:06   24 aviation development.

02:06   25   Q.   Did that mishap have anything to do with your

02:06 1 RIV mode invention?

02:06 2   A.   No. It did not.

02:06 3   Q.   How hard did your team work to make Eagle Eye

02:06 4 fly?

02:06 5   A.   Very hard. Lot of long days, lot of missed

02:06 6 meals, but it was a lot of fun too.

02:06 7   Q.   Are you proud of your patent?

02:06 8   A.   Absolutely.

02:06 9   Q.   All right. Thank you for your time today,

02:07 10 Mr. Harris.

02:07 11   MR. RICH: Pass the witness.

02:07 12   CROSS-EXAMINATION

02:07 13 BY MR. YIN:

02:07 14   Q.   Good afternoon.

02:07 15   A.   Good afternoon.

02:07 16   Q.   My name is Qingyu Yin. I'm with defendant

02:07 17 DJI. I have a few questions to ask you.

02:07 18   A.   Okay.

02:07 19   Q.   You had mentioned formation flight, right?

02:07 20 Your patent does not ever mention formation flight, I

02:07 21 don't think --

02:07 22   THE COURT: Counsel, you might pull that

02:07 23 microphone just a little closer.

02:07 24   MR. YIN: All right.

02:07 25   A.   Please repeat.

198

02:07   1   BY MR. YIN:

02:07   2   Q.   Okay. You mentioned on direct testimony that

02:07   3   your invention covers formation flight, but the '909

02:07   4   patent never mentioned formation flight?

02:07   5   A.   It does not mention it.

02:07   6   Q.   Right. The idea -- your idea that led to the

02:08   7   '909 patent was this vertical inertial velocity

02:08   8   control, right?

02:08   9   You called it RIV control?

02:08 10   A.   Yes.

02:08 11   Q.   So this relative velocity control was the idea

02:08 12   that you came up with -- you and your team came up with

02:08 13   in response to the Navy project in 1998?

02:08 14   A.   That was the impetus behind it. Yes.

02:08 15   Q.   Navy came to you and said, we want to come up

02:08 16   with a way of -- for an aircraft to approach a moving

02:08 17   ship. In your words -- let me see. I believe you said

02:08 18   pitching and rolling, moving ship.

02:08 19   So it's a moving target, right?

02:08 20   A.   Yes.

02:08 21   Q.   And the aircraft has to come and approach the

02:08 22   moving target.

02:08 23   That was the problem Navy presented to you?

02:08 24   A.   Yes. And land on it.

02:08 25   Q.   Right. But -- and for you to solve the

199

02:08   1   problem, you came up with some solution. In the end,

02:08   2   you call it relative velocity control, right?

02:09   3   A.   That mode is the basis for automatic landing.

02:09   4   Yes, sir.

02:09   5   Q.   You started with something else, though. You

02:09   6   started with position. You wanted to see if you could

02:09   7   just -- you could just control the aircraft to approach

02:09   8   and land on the pitch and rolling, moving ship by just

02:09   9   figuring out the relative position between the two?

02:09   10   A.   That was the initial thought.

02:09   11   Q.   And in the end, you realized -- let me see.

02:09   12   You were deposed before, right? You testified

02:09   13   at the deposition.

02:09   14   Do you remember that?

02:09   15   A.   Yes.

02:09   16   Q.   Yeah. So in that process of solving that

02:09   17   problem, I believe you said --

02:09   18   THE COURT: Counsel, that's not the way

02:09   19   we do it here. You ask a question --

02:09   20   MR. YIN: I'll ask the question. Yeah.

02:09   21   Sorry.

02:09   22   BY MR. YIN:

02:09   23   Q.   So when you -- when you tried the position --

02:10   24   a relative position solution to have the aircraft

02:10   25   approach and land on the moving ship, you realized that

02:10 1   using just the relative positioning would be very

02:10 2   cumbersome or maybe near impossible; is that right?

02:10 3   A.   I wouldn't characterize it that way.

02:10 4   Q.   Would you agree that using just relative

02:10 5   position would be cumbersome and difficult, if not

02:10 6   impossible?

02:10 7   A.   I don't agree with that statement.

02:10 8   MR. YIN: Can we put up the deposition

02:10 9   testimony?

02:10 10   Go to Page -- actually, 105. It's pretty

02:10 11 long. So I can read from here.

       12 BY MR. YIN:

02:10 13   Q.   Do you see it on your screen?

02:10 14   A.   I do.

02:10 15   Q.   My colleague asked you to describe the RIV,

02:11 16 relative inertial velocity.

02:11 17   Do you see that?

02:11 18   MR. RICH: Your Honor, we object.

02:11 19   THE COURT: What is your objection?

02:11 20   MR. RICH: This is improper impeachment.

02:11 21   THE COURT: I agree. Sustained.

02:11 22   MR. YIN: I was going to get to his

02:11 23 answer.

02:11 24   THE COURT: No. That's not the way it

02:11 25 works. Let me let the ladies and gentlemen know.

02:11 1   Ladies and gentlemen of the jury, before

02:11 2 we get to trial, the lawyers are able to take one of

02:11 3 these depositions of these witnesses. Probably

02:11 4 everyone that you see has had a deposition taken of

02:11 5 them where they meet with the lawyers from one side and

02:11 6 the other side. They're represented by counsel, and

02:11 7 the lawyers will ask them questions under oath just

02:11 8 like they are here in the courtroom.

02:11 9   And so that's what -- when counsel's

02:11 10 referring to a deposition, that's what he's referring

02:11 11 to.

02:11 12   You may proceed.

02:11 13   MR. YIN: Thank you.

02:11 14 BY MR. YIN:

02:12 15   Q.   So when you were trying to solve the problem

02:12 16 with having the aircraft approach the moving, pitching,

02:12 17 rolling ship, you tried position -- relative position

02:12 18 only first, right?

02:12 19   A.   Yes.

02:12 20   Q.   And that was difficult?

02:12 21   A.   It worked but was not accurate enough.

02:12 22   Q.   That's why you introduced the relative

02:12 23 velocity control?

02:12 24   A.   Correct.

02:12 25   Q.   And the relative velocity is the velocity of

202

02:12   1   the aircraft relative to the moving ship?

02:12   2   A.   Yes.

02:12   3   Q.   Okay. Was it true that when you came up with

02:12   4   the solution, you actually had relative velocity

02:12   5   control most of the time?

02:13   6   A.   It is controlling relative velocity most of

02:13   7   the time, yes.

02:13   8   Q.   And relative positioning would be used only

02:13   9   towards the very, very end when the aircraft is about

02:13   10 to land on a ship?

02:13   11   A.   No. May I explain?

02:13   12   Q.   I'm sure Mr. Rich is going to ask you to

02:13   13 explain on redirect, if you don't mind.

02:13   14   So when you command the aircraft to fly at

02:13   15 relative velocity with respect to the ship, which is

02:13   16 also moving, there has to be an input to your relative

02:13   17 velocity control system; that's the relative velocity

02:14   18 itself, right?

02:14   19   A.   No.

02:14   20   Q.   If I -- if I ask you to explain what this

02:14   21 sentence means: Commanded data representing a selected

02:14   22 velocity of the aircraft relative to the reference

02:14   23 vehicle, can you explain what that means?

02:14   24   A.   Yes. Would you like me to explain it?

02:14   25   Q.   Yes.

02:14   1   A.   Okay. So as I was discussing earlier, the

02:14   2   information that's being transmitted to the vehicle is

02:14   3   indicative of both position and velocity, and there are

02:14   4   multiple ways to communicate that information. It does

02:14   5   not have to be communicating the actual velocity of

02:15   6   anything. It can be communicating nothing but

02:15   7   position, and the aircraft can figure out what the

02:15   8   velocity is from the position changing over time.

02:15   9   So while the statement says we're

02:15   10 communicating, we're sending that information, it does

02:15   11 not imply anything about what the data itself going in

02:15   12 that uplink to the vehicle is.

02:15   13   Q.   You know there's a communication link between

02:15   14 a ship and the aircraft, right?

02:15   15   A.   Correct.

02:15   16   Q.   You call it uplink?

02:15   17   A.   Yes.

02:15   18   Q.   So there's information about the ship coming

02:15   19 from the ship to the aircraft?

02:15   20   A.   There is information coming from the --

02:15   21 originating in the ground station going to the

02:15   22 aircraft, yes.

02:15   23   Q.   On the uplink?

02:15   24   A.   On the uplink.

02:15   25   Q.   And in your relative velocity control system

204

02:15   1   there's the information about the ship going on the

02:16   2   uplink to the aircraft?

02:16   3   A.   There can be. That's a way to implement it.

02:16   4   Q.   And that information would include the ship's

02:16   5   positioning information on the uplink?

02:16   6   A.   At times, yes.

02:16   7   Q.   And -- but it would be much better if you had

02:16   8   both positioning and the velocity information of the

02:16   9   ship going on the uplink to the aircraft?

02:16   10   A.   It is, generally speaking, more accurate to

02:16   11   have a velocity that was coming from a sensor designed

02:16   12   to measure velocity --

02:16   13   Q.   From the ship --

02:16   14   A.   -- but it is not necessary.

02:16   15   Q.   It would be better to have that information

02:16   16   coming from --

02:16   17   A.   It will be, by "better," more accurate.

02:16   18   Q.   Because the ship can measure its own velocity

02:16   19   much more precisely?

02:16   20   A.   That's actually not how we did it.

02:16   21   Q.   Do you agree that positioning and velocity are

02:17   22   two different physical parameters?

02:17   23   A.   They are different parameters. They are

02:17   24   related to one another.

02:17   25   Q.   But they are different?

02:17   1   A.   They are. One's the derivative of the other.

02:17   2   Q.   In your relative velocity control system

02:17   3   you -- when the operator is trying to fly the aircraft

02:17   4   at a relative velocity to the ship, it was -- you

02:17   5   provided a human graphic interface, right?

02:17   6   A.   We did.

02:17   7   Q.   Because for the person to figure out that the

02:17   8   relative velocity, based on its -- based on the

02:17   9   aircraft's current velocity and the ship's current

02:17   10   velocity, just doing that in the human head would be

02:17   11   difficult?

02:17   12   A.   Correct.

02:17   13   Q.   So you provided -- I believe it's in one of

02:17   14   the patent -- in the -- one of the figures in the

02:18   15   patents?

02:18   16   A.   We did.

02:18   17   Q.   All right.

02:18   18   MR. YIN: Can we put up the '909 patent?

02:18   19   BY MR. YIN:

02:18   20   Q.   Figure 6. This is the interface you came up

02:18   21   with for the -- for the relative velocity control

02:18   22   system, right?

02:18   23   A.   This is one of the human interfaces, yes.

02:18   24   THE COURT: Counsel, did I just miss you

02:18   25   saying for the record what's up there? You may have

02:18   1   said it and I just didn't hear it.

02:18   2   MR. YIN: Yes. This is the '909 patent,

02:18   3   Exhibit No. JTX-002.

02:18   4   THE COURT: Thank you.

02:18   5   MR. YIN: We're looking at Figure 6.

        6   BY MR. YIN:

02:18   7   Q.   So here there's a little icon in the middle

02:18   8   that's tilted at a little angle that looks like a ship,

02:18   9   right?

02:18   10   A.   Correct.

02:18   11   Q.   And this -- this interface allows the user,

02:19   12   the operator, to basically touch the little dot. I

02:19   13   think it's 85, is it?

02:19   14   A.   That is what we call the command bug, yes.

02:19   15   Q.   And the operator can -- the person can move

02:19   16   that little circle, 85, to any location the person

02:19   17   would like to?

02:19   18   A.   Correct.

02:19   19   Q.   And that -- the distance and relative

02:19   20   orientation of that little circle, 85, with respect to

02:19   21   the center of the ship, will be basically the relative

02:19   22   velocity the operator selects, right?

02:19   23   A.   In the -- when using this display, that is

02:19   24   correct.

02:19   25   Q.   Okay. I have a couple more questions.

207

02:20   1   Have you ever flown a DJI drone?

02:20   2   A.   No.   I was not aware of any products of DJI.

02:20   3   Wasn't even aware of the company.

02:20   4   Q.   Never interested?

02:20   5   A.   No.

02:20   6   Q.   Okay.   I would appreciate some background

02:20   7   information about helicopter control.   I believe you

02:20   8   understand what fly-by-wire means, right?

02:20   9   A.   Certainly.

02:20   10   Q.   That's basically telling you that the

02:20   11 helicopter control is computerized.   So the operator

02:20   12 moves the stick, the control on a helicopter, the

02:21   13 movement will be translated by the computer to command

02:21   14 the helicopter, right?

02:21   15   A.   That's correct.   No mechanical linkage.

02:21   16   Q.   No direct mechanical --

02:21   17   A.   No direct mechanical linkage.

02:21   18   Q.   So if I say I'm pushing the stick to control,

02:21   19 say, pitch, pitch is basically the helicopter tilting

02:21   20 forward, backward, right?

02:21   21   If I use the stick to command pitch rate,

02:21   22 basically that means the movement.   If I push the stick

02:21   23 forward say .1-inch, that .1-inch will be translated to

02:21   24 a certain angle of pitch?

02:21   25   A.   You just said rate control.

208

02:21 1   Q.   I'm sorry. How fast the aircraft should tilt

02:21 2   forward?

02:21 3   A.   That's -- yeah. You can -- you can envision

02:21 4   and create a system that works that way, yes.

02:21 5   Q.   And if I say I want to -- I want to have the

02:21 6   stick control the pitch, you call it attitude, right?

02:22 7   Basically that's the pitch angle. If I want to have

02:22 8   the stick control or command the pitch angle, say

02:22 9   .1-inch translate to 5 degrees, then the computer is

02:22 10 going to take that .1-inch and translate it into

02:22 11 5 degrees and command the helicopter to tilt forward

02:22 12 5 degrees, right?

02:22 13   A.   You can create a system that does that, yes.

02:22 14   Q.   There -- you mentioned -- you talked about two

02:22 15 different -- two concepts, positioning and velocity.

02:22 16 Holding position versus holding velocity. Those two

02:22 17 are different concepts, right?

02:22 18   A.   Yes. You're holding two different parameters

02:22 19 in different flight modes, yes.

02:22 20   Q.   Okay. You worked on Eagle Eye. Just a couple

02:23 21 questions on that.

02:23 22   Eagle Eye was never offered for sale?

02:23 23   A.   It was never what?

02:23 24   Q.   Offered for sale.

02:23 25   A.   No. It was never offered for sale.

02:23   1   Q.   And the unmanned aerial vehicles Bell

02:23   2   develops, they are very different from the commercial

02:23   3   UAVs, right?

02:23   4   A.   I left Bell before they developed anything

02:23   5   other than the demonstrations we did with Eagle Eye.

02:23   6   So I don't know what they do now.

02:23   7   Q.   Okay. I think that's all I have. Thank you

02:23   8   very much.

02:23   9   REDIRECT EXAMINATION

02:23   10 BY MR. RICH:

02:24   11   Q.   Just a couple quick questions, Mr. Harris.

02:24   12 You were asked some questions about Figure 6 of your

02:24   13 patent.

02:24   14   Do you remember that?

02:24   15   A.   Yes.

02:24   16   Q.   Is your patent limited to that figure?

02:24   17   A.   No. This is one of the many ways the operator

02:24   18 can interact with the system.

02:24   19   Q.   Where is your invention defined within the

02:24   20 patent?

02:24   21   A.   Pardon me?

02:24   22   Q.   What part of the patent actually defines the

02:24   23 boundaries of your --

02:24   24   A.   The claims are the legal description of the

02:24   25 invention.

02:24 1   Q.   Now, you mentioned that movement is the

02:24 2   derivative of position.

02:24 3   Do you remember that?

02:24 4   A.   I do.

02:24 5   Q.   Does that mean that if you -- if you tell me

02:24 6   your position, I can determine your movement from your

02:24 7   position?

02:24 8   A.   From more than one position, yes. If I tell

02:24 9   you my position now and later I tell it again and

02:24 10 again, you can certainly create the parameter motion

02:24 11 from that.

02:24 12   Q.   It's kind of like your Dallas or Fort Worth to

02:24 13 Waco travel example, right?

02:25 14   A.   Yeah. That was a very crude example of an

02:25 15 hour apart.

02:25 16   Q.   Right. If you tell me you're in Fort Worth

02:25 17 and you've moved to Waco, you've communicated your

02:25 18 position and your movement to me, right?

02:25 19   A.   I did.

02:25 20   Q.   Now, out of all the work in your 33 years at

02:25 21 Bell, what would you say is the work you're most proud

02:25 22 of?

02:25 23   A.   Well, it has to be the entire body of work

02:25 24 that the Eagle Eye did. We were so far ahead of our

02:25 25 time, obviously too far ahead of our time for the

—211—

02:25   1   Navy's taste at that time. They -- they were risk

02:25   2   averse to trying to do something so radical at that

02:25   3   point. So that's why we never were able to offer it

02:25   4   for sale.

02:25   5   Q.   Thank you, Mr. Harris.

02:25   6   A.   Thank you.

02:25   7   MR. YIN: I have nothing further.

02:25   8   THE COURT: May this witness be

02:25   9   dismissed?

02:25   10   That's up to you.

02:25   11   MR. YIN: I have nothing further. Thank

02:25   12   you.

02:25   13   THE COURT: Thank you for being here.

02:26   14   You're welcome -- I always feel rude when I say you can

02:26   15   leave. You can leave, but you're welcome to go back to

02:26   16   Fort Worth or you're welcome to stay here for the rest

02:26   17   of the trial. And you're welcome to stay -- remain in

02:26   18   the courtroom.

02:26   19   Who's the next witness?

02:26   20   MR. PANKRATZ: Your Honor, plaintiffs

02:26   21   will call Kevin Christensen.

02:26   22   (The witness was sworn.)

02:26   23   MR. PANKRATZ: Your Honor, may I

02:26   24   approach?

02:27   25   THE COURT: Of course.

212

02:27 1   DIRECT EXAMINATION

02:27 2 BY MR. PANKRATZ:

02:27 3   Q.   Good afternoon, sir. How are you?

02:27 4   A.   I'm doing fine.

02:27 5   Q.   Could you please introduce yourself to the

02:27 6 jury?

02:27 7   A.   Yes. My name is Kevin Christensen, and I work

02:27 8 for Bell Textron.

02:27 9   Q.   Where are you originally from,

02:27 10 Mr. Christensen?

02:27 11   A.   I was born in Atlanta, Georgia, but my family

02:27 12 moved around some. We moved to New Jersey, and then I

02:27 13 went to elementary school in Southern California and

02:27 14 then high school in Northern California.

02:27 15   Q.   Where do you live now?

02:27 16   A.   I live in Plano, Texas.

02:27 17   Q.   How long have you been there?

02:27 18   A.   I've lived there since 2004.

02:27 19   Q.   Now, do you have family in the area?

02:27 20   A.   I do, live with my wife Karen. I also have --

02:27 21 my son Kyle, he recently moved back to the area. He

02:27 22 works in advertising in Dallas. And my daughter,

02:28 23 Amanda, she did live in the area, but she's now working

02:28 24 as a video game artist out in California.

02:28 25   Q.   Backing up just a little bit, where did you go

02:28 1   to college?

02:28 2   A.   I went to the Air Force Academy in Colorado

02:28 3   Springs.

02:28 4   Q.   How'd you decide to go there?

02:28 5   A.   Well, when I was in high school, I had some

02:28 6   fairly big dreams. I wanted to be an astronaut,

02:28 7   thought I'd be -- could possibly be the first person to

02:28 8   walk on Mars. Big dreams.

02:28 9   And before my senior year, I went out to the

02:28 10 Air Force Academy on a scientific seminar, and while I

02:28 11 was there, I found out that it was one of the only

02:28 12 schools in the country that taught astronautics -- it

02:28 13 was a bachelor's degree -- and also found out the

02:28 14 preferred track to become an astronaut was essentially

02:28 15 go to the Air Force Academy, get your master's degree,

02:28 16 go fly fighters for the Air Force, go to test pilot

02:28 17 school and then at that point they'd choose you to

02:29 18 become an astronaut. So I tried to follow that track.

02:29 19   Q.   Was it tough to get into the academy?

02:29 20   A.   It was. Each congressman can appoint two

02:29 21 individuals so I was one of the two. They look at your

02:29 22 academics, but they also look at extracurricular

02:29 23 activities. Like, I was class president and played

02:29 24 football and golf on varsity teams.

02:29 25   Q.   But you got in there at the academy, right?

214

02:29 1   A.   I did.

02:29 2   Q.   Once you were there, how did you do

02:29 3   academically?

02:29 4   A.   I think I did fairly well. I did study

02:29 5   astronautical engineering while I was there, had two

02:29 6   specialities, orbital mechanics and then also the

02:29 7   control of spacecraft, in the astronautical engineering

02:29 8   department.

02:29 9   And when I graduated in 1984, out of 1,000

02:29 10   cadets, I was ranked fourth academically and tenth

02:29 11   overall.

02:29 12   Q.   You mentioned the next step on the way to

02:29 13   being an astronaut is a master's degree.

02:29 14   Did you go to --

02:29 15   A.   I did. My senior year I applied for several

02:30 16   scholarships, and I was awarded a Boeing scholarship to

02:30 17   go attend the University of Washington in Seattle. And

02:30 18   there I studied aerospace engineering and specialized

02:30 19   in control aerospace vehicles.

02:30 20   Q.   Did you receive a master's degree?

02:30 21   A.   I did. I finished my master's degree in 1985.

02:30 22   Q.   Where did you head next after that, sir?

02:30 23   A.   So on the track, I went to pilot training in

02:30 24   Lubbock, Texas, and while there I met my wife Karen,

02:30 25   and I got selected to come back as an instructor pilot

02:30   1   for three years before I continued on.

02:30   2   Q.   What kind of airplanes were you flying out

02:30   3   there in Lubbock?

02:30   4   A.   I flew a 237 Tweet for the three years.

02:30   5   Q.   And then what kind of planes were you an

02:30   6   instructor for?

02:30   7   A.   That was it.

02:30   8   Q.   That was it?

02:30   9   A.   Yeah.

02:30   10   Q.   That was the one?

02:30   11   A.   Yes, sir.

02:30   12   Q.   After that, what kind of roles did you have in

02:30   13   the Air Force?

02:30   14   A.   So I got selected to go to F-16 training.

02:30   15   That was out in Arizona. And then the family moved to

02:31   16   Southern Georgia for my F-16 assignment, and I got to

02:31   17   spend a little bit of time in Saudi Arabia during that

02:31   18   assignment.

02:31   19   Q.   What were you doing at that point?

02:31   20   A.   I was an F-16 fighter pilot, and the time in

02:31   21   Saudi Arabia -- we deployed over there, and it was to

02:31   22   enforce the no-fly zone over Southern Iraq. So we got

02:31   23   to fly some combat missions.

02:31   24   Q.   I think you mentioned that you got to spend

02:31   25   time as a test pilot; is that right?

02:31   1   A.   Yes, sir. So after my tour in the F-16, I got

02:31   2   selected for test pilot school at Edwards Air Force

02:31   3   Base and was an F-16 test pilot.

02:31   4   Then I went back on the instructor staff at

02:31   5   test pilot school and taught a course called "handling

02:31   6   qualities," basically teaching the test pilots and

02:31   7   flight test engineers how to evaluate different

02:31   8   aircraft to make sure they were safe and easy to fly.

02:32   9   Then after that, I was selected as part of the

02:32   10   initial cadre to fly the F-22 Raptor. I was the tenth

02:32   11   pilot to fly the aircraft, and really at that point I

02:32   12   felt like I'd made it to the top of the pyramid for

02:32   13   test pilots, if you ever saw The Right Stuff.

02:32   14   And NASA actually called me out to interview

02:32   15   to become an astronaut. Unfortunately, I got knocked

02:32   16   out for health reasons. So that was kind of the end of

02:32   17   the whole astronaut dream.

02:32   18   Q.   How long did you end up serving in the Air

02:32   19   Force, sir?

02:32   20   A.   I served for 20 years. My last assignment was

02:32   21   down in Florida. I was a squadron commander for the

02:32   22   Air Force's weapons test squadron and then served on

02:32   23   the Air Armament Center staff, nonflying job at the end

02:32   24   of my career.

02:32   25   Q.   And when was it that you retired from the Air

02:32   1   Force?

02:32   2   A.   I retired at 20 years as a lieutenant colonel

02:32   3   in 2004.

02:32   4   Q.   What'd you do then?

02:32   5   A.   Well, I ended up taking a year off. My wife's

02:33   6   family lived in Dallas, and she ended up getting a job

02:33   7   teaching elementary school in Plano. So we moved

02:33   8   there, got our kids enrolled in school.

02:33   9   I really worked on trying to become a better

02:33   10   husband, a better father and also focused on my faith.

02:33   11   I was trying to figure out what the next chapter that

02:33   12   God had in store for me given that the whole astronaut

02:33   13   thing hadn't worked out.

02:33   14   Q.   What did your next chapter turn out to?

02:33   15   A.   In 2005, I got hired by Bell Textron as a

02:33   16   handling quality engineer, and really I felt like that

02:33   17   was a perfect fit for me with my test pilot background,

02:33   18   my experience in flying, also combined with my

02:33   19   education in designing the controls for aerospace

02:33   20   aircraft.

02:33   21   Q.   You still work --

02:33   22   A.   In this case, it was for rotary-wing aircraft,

02:33   23   but it was still what I was trained to do in my

02:34   24   education.

02:34   25   Q.   You still work there today at Bell?

218

02:34   1   A.   I do.

02:34   2   Q.   So roughly 18 years you've been there with the

02:34   3   company?

02:34   4   A.   Yes, sir.   This summer will be 18 years.

02:34   5   Q.   What is your current position at Bell Textron?

02:34   6   A.   I was recently named as an associate technical

02:34   7   fellow in the areas of handling qualities and control

02:34   8   laws.

02:34   9   Q.   What does an associate technical fellow at

02:34   10   Bell do?

02:34   11   A.   So the technical fellow community at Bell,

02:34   12   they are the subject-matter experts in whatever area

02:34   13   that you're designated.   So in my case, I'm designated

02:34   14   in handling qualities and control laws as Bell's

02:34   15   expert.

02:34   16   Q.   Are technical fellows at Bell the top of the

02:34   17   engineering pyramid?

02:34   18   A.   Yes, sir.   They are.

02:34   19   Q.   Okay.   And do you have a particular specialty

02:34   20   as a fellow?

02:34   21   A.   Yes, sir.   It's control laws and handling

02:34   22   qualities.

02:34   23   Q.   How many other engineers there -- or how many

02:34   24   other technical fellows are there with your specialty

02:34   25   at Bell?

219

02:34   1   A.   There's one other that has both of those

02:35   2   specialities, handling qualities and control laws.

02:35   3   Q.   What are some of the things that you're

02:35   4   currently working on there at the company?

02:35   5   A.   For the last three years I've been working on

02:35   6   the control laws for the V-280 Valor, which is Bell's

02:35   7   entry into a program called the "Future Long-Range

02:35   8   Assault Aircraft."

02:35   9   And essentially, it's the aircraft that's

02:35   10 going to replace the thousands of Black Hawk

02:35   11 helicopters that are out there that the Army's flying

02:35   12 today.

02:35   13   And V-280 goes about twice as fast and twice

02:35   14 as far as the Black Hawk. So it's quite a leap in

02:35   15 technology, and I've been working on the control laws

02:35   16 for that aircraft.

02:35   17   Q.   Sir, during your time at Bell Textron, you've

02:35   18 been awarded several United States patents; isn't that

02:35   19 true?

02:35   20   A.   Yes, sir.

02:35   21   Q.   And you're aware that one of your patents is

02:35   22 at issue in this case, right?

02:35   23   A.   I am.

02:35   24   Q.   And I've actually handed it to you, if you

02:35   25 look in front of you.

220

02:35   1   MR. PANKRATZ: And, Mr. Patterson, if you

02:35   2   could bring up JTX-8, please.

02:36   3   BY MR. PANKRATZ:

02:36   4   Q.   Do you recognize that patent, sir?

02:36   5   A.   I do.

02:36   6   Q.   And you see it's marked with the number

02:36   7   U.S. Patent 9,162,752. So if I call that the "'752

02:36   8   patent," you'll know what I'm talking about; is that

02:36   9   fair?

02:36   10   A.   Yes, sir.

02:36   11   MR. PANKRATZ: Now, Mr. Patterson, if we

02:36   12 could go to the first page of the patent.

        13 BY MR. PANKRATZ:

02:36   14   Q.   And you can see there, sir, that this was

02:36   15 filed on July 15th, 2011.

02:36   16   Do you see that?

02:36   17   A.   Yes.

02:36   18   Q.   And that sounds about right for when you all

02:36   19 filed this patent?

02:36   20   A.   Yes, sir.

02:36   21   Q.   Do you recall around the time this patent was

02:36   22 filed, were you working on a specific project at Bell

02:36   23 Textron that led to this invention?

02:36   24   A.   I was.

02:36   25   Q.   What was the goal of that project?

221

02:36 1   A.   So that project was called the Advanced

02:36 2 Control Laws Project. And in a nutshell, we were

02:36 3 trying to make rotary-wing aircraft easier to fly.

02:37 4 Personally I got a chance to fly helicopters when I was

02:37 5 a test pilot in the Air Force. And to tell you the

02:37 6 truth, it's quite a humbling experience to try to fly a

02:37 7 basic helicopter. So I kind of made a joke. I wanted

02:37 8 to make it so easy that even a fighter pilot could fly

02:37 9 this aircraft.

02:37 10   And, you know, but beyond that, the aircraft

02:37 11 that we were flying often fly into what we call

02:37 12 degraded visual conditions where the pilot can't really

02:37 13 see where the aircraft is, can't see the ground, can't

02:37 14 see the obstacles, can't see the terrain. So we were

02:37 15 trying to make it so easy that, for safety reasons, if

02:37 16 the pilot just released the stick, released the

02:37 17 controls of the aircraft, it would come into a nice

02:37 18 safe hover, not going to hit anything if you're in a

02:37 19 hover. So it was really for safety and make the

02:37 20 aircraft really easy to fly.

02:37 21   Q.   Now, I noticed, sir, that you're named first.

02:38 22 It says inventors: Kevin Thomas Christensen.

02:38 23   That's you, correct, sir?

02:38 24   A.   Yes, sir.

02:38 25   Q.   Plano, Texas. I see it also mentions Jack

222

02:38 1   Shue and Troy Caudill?

02:38 2   A.   Yes.

02:38 3   Q.   Were they working on that same project with

02:38 4   you at Bell?

02:38 5   A.   Yes, sir. We worked together as co-inventors.

02:38 6   Q.   What were their roles and your role in this

02:38 7   project?

02:38 8   A.   So I'll start with Jack. He was a Ph.D.,

02:38 9   Dr. Jack Shue. He specialized in two areas, aerospace

02:38 10   engineering and electrical engineering. So really

02:38 11   smart guy. And he basically optimized the control laws

02:38 12   so that it would handle the dynamics of the aircraft

02:38 13   and do what we wanted the aircraft to do.

02:38 14   And then Troy, on the other side, he was a

02:38 15   retired marine covert pilot, and he would fly the

02:38 16   simulator and give us feedback as to whether this was

02:38 17   something that would be useful to a pilot. And so in

02:39 18   that respect he helped us to design the control laws so

02:39 19   that it would be easy to fly for a pilot.

02:39 20   And my part was, I worked mostly as an

02:39 21   interpreter between the two. So we had a Ph.D. and a

02:39 22   marine pilot often not able to talk, but I spoke pilot

02:39 23   and I spoke engineer. And I also worked on the logic

02:39 24   to try and put us into the right control loops for the

02:39 25   modes that we were trying to fly.

02:39 1   Q.   Now, we're going to go into control loops and

02:39 2   control logic deeper in a little bit. But you've been

02:39 3   using this term "control laws" a few times.

02:39 4   At a high level, what is that?

02:39 5   What are control laws?

02:39 6   A.   Control laws are essentially -- you have these

02:39 7   different loops, feedback loops we call them, which

02:39 8   control the aircraft to try and hold a certain

02:39 9   parameter, maybe airspeed or groundspeed. And then the

02:39 10 other side of it is the logic to select which loop that

02:40 11 we want to fly at a given time.

02:40 12   Q.   Now, focusing in particular at your '752

02:40 13 patent, at a high level, what's the invention you guys

02:40 14 came up with?

02:40 15   A.   We really just wanted to make it easy for a

02:40 16 pilot to fly a rotary-wing aircraft. Basically it's

02:40 17 automatic hover hold. That's the name of the patent.

02:40 18 So in this case if the pilot got into a certain flight

02:40 19 condition, could release the controls and the aircraft

02:40 20 would automatically slow down into a hover.

02:40 21   Q.   So, again, what you just said is the pilot's

02:40 22 got the sticks, and if the pilot lets go and the

02:40 23 aircraft is in a certain parameter, set of parameters,

02:40 24 it will automatically just slow down and hover and

02:40 25 hold?

02:40   1   A.   Yes, sir.

02:40   2   Q.   And that was your invention, this automatic

02:40   3   switchover into hover hold?

02:40   4   A.   Correct.

02:40   5   Q.   Can you explain the benefits of using your

02:41   6   advanced control law concepts to provide for this

02:41   7   switchless transition into hover hold?

02:41   8   A.   Yes. We wanted it to be intuitive. We wanted

02:41   9   it to seamlessly transition into these modes. We

02:41   10   wanted it to be so easy that even a non-helicopter

02:41   11   pilot could fly it.

02:41   12   And like I said, especially in degraded visual

02:41   13   conditions, could be brownout, but it could be anything

02:41   14   that would keep the pilot from being able to see where

02:41   15   the aircraft is relative to the ground and other

02:41   16   obstacles.

02:41   17   MR. PANKRATZ: Mr. Patterson, if you

02:41   18   could bring up Column 3, Lines 4 through 12, from

02:41   19   Mr. Christensen's patent.

02:41   20   BY MR. PANKRATZ:

02:41   21   Q.   All right. Sir, do you see that on your

02:41   22   screen or you could turn to it in your patent, either

02:41   23   one? Let me know when you're there.

02:41   24   A.   Column 3, what --

02:41   25   Q.   Lines 4 through 12.

02:41   1   A.   4 through 12. Okay. I see that.

02:42   2   Q.   So here in this paragraph you and your

02:42   3   co-inventors are describing four example functions:

02:42   4   Automatic hover hold, position hold, emergency hover

02:42   5   hold and high speed transition to hover.

02:42   6   Do you see those?

02:42   7   A.   I do.

02:42   8   Q.   Let's start with the first one. Within the

02:42   9   context of what's specifically being described here,

02:42   10 what is automatic hover hold?

02:42   11   A.   So that's where if the pilot were to release

02:42   12 the controls, the aircraft would automatically slow

02:42   13 down into a hover and hold the hover.

02:42   14   Q.   And what, in particular, is being described

02:42   15 here with the concept of position hold or PH?

02:42   16   A.   So once the aircraft is in a hover, then it

02:42   17 would grab a position over the ground so that if the

02:42   18 aircraft was to get blown off of that position, it

02:42   19 would minimize the position error and come back to the

02:42   20 same position.

02:42   21   Q.   So what's the relationship between automatic

02:43   22 hover hold and position hold?

02:43   23   Do those work together?

02:43   24   A.   They do. Position hold is just one of the

02:43   25 features of automatic hover hold. After you've pulled

02:43   1   into the hover, it's going to hold the position.

02:43   2   Q.   What is high speed transition to hover, as

02:43   3   described right here?

02:43   4   A.   So on that function, what we envisioned and

02:43   5   what we tested was the aircraft could be high speed and

02:43   6   the pilot would be able to trim the aircraft up into a

02:43   7   deceleration with the pilot's hands off of the

02:43   8   controls, and it would decelerate all the way into the

02:43   9   envelope where automatic hover would take over, and at

02:43   10 that point it would automatically enter a hover.

02:43   11   Q.   So you put the aircraft in the circuit --

02:43   12 certain trim, let go of the controls and it just goes

02:43   13 all the way down and starts hovering?

02:43   14   A.   It slows all the way down to a hover.

02:43   15   Q.   All automatically?

02:43   16   A.   Yes.

02:43   17   Q.   What's emergency hover hold, as being

02:43   18 described right here?

02:44   19   A.   So that was a function that we envisioned with

02:44   20 automatic hover hold. Like the name says, maybe

02:44   21 there's an emergency in the aircraft. Could be the

02:44   22 pilot has lost consciousness. So there might be some

02:44   23 biometric sensors on the aircraft to keep track of the

02:44   24 pilot's senses, whether it's through eye, pulse or

02:44   25 maybe just grip on the stick. In that case the

227

02:44   1   aircraft would automatically fly itself to a hover. I

02:44   2   say "hover" and maybe even land.

02:44   3   Some other scenarios could be maybe there's

02:44   4   battle damage or some kind of damage on the aircraft

02:44   5   which would make it so the controllers were no longer

02:44   6   connected to the control surfaces of the aircraft or

02:44   7   the computers. In that case the pilot could engage an

02:44   8   emergency hover or maybe the pilot just lost situation

02:44   9   awareness, lost track of where the ground was, where

02:44   10 the buildings or obstacles were and wanted to just pull

02:44   11 the aircraft into a hover for safety reasons.

02:44   12 Q.   So fair to say you're describing several

02:45   13 different examples of ways to position the aircraft to

02:45   14 go into this automatic hover-hold state?

02:45   15 A.   Yes, sir. Exactly.

02:45   16 Q.   Right after describing these you mention that

02:45   17 these four functions -- or your patent, rather,

02:45   18 mentions that these four functions are applicable to

02:45   19 fly-by-wire.

02:45   20 Do you see that?

02:45   21 A.   I do.

02:45   22 Q.   And that's actually a term the jury's heard a

02:45   23 couple of times, but could you describe in your words

02:45   24 what does fly-by-wire mean?

02:45   25 A.   So for fly-by-wire, there's an operator of the

02:45   1   aircraft. Could be a pilot, either in the aircraft or

02:45   2   on the ground and -- putting control inputs in.

02:45   3   Those -- instead of going directly to the surfaces of

02:45   4   the aircraft and controlling the aircraft, it goes to a

02:45   5   computer, and the computer control laws are going to

02:45   6   decide what the surfaces of the aircraft are going to

02:45   7   do to do what the pilot wants the aircraft to do, do

02:45   8   what he programmed it to do.

02:45   9   Q.   Okay.

02:46   10   MR. PANKRATZ: Mr. Patterson, if you

02:46   11   could move us back to the abstract.

02:46   12   And ladies and gentlemen, this is at the

02:46   13   front of the patent.

02:46   14   There, we found it. Thank you,

02:46   15   Mr. Patterson.

02:46   16   BY MR. PANKRATZ:

02:46   17   Q.   The very first part -- well, let me ask you,

02:46   18   do you have a general understanding of what the

02:46   19   abstract of a patent is about?

02:46   20   A.   I do.

02:46   21   Q.   Just basically high-level description?

02:46   22   A.   Yes.

02:46   23   Q.   Okay. The very first sentence in your

02:46   24   abstract states: A system and method to control

02:46   25   hovering flight of a rotary aircraft.

02:46 1   Do you see that?

02:46 2   A.   I do.

02:46 3   Q.   You think that's a pretty fair high-level

02:46 4 description of y'all's invention?

02:46 5   A.   It is.

02:46 6   Q.   Okay. What's a rotary aircraft?

02:46 7   A.   Could be any aircraft with rotors that are

02:46 8 used to lift the aircraft up off the ground and hover

02:46 9 the aircraft.

02:46 10   Q.   So I guess this is an example of a -- well, we

02:46 11 all know it's a toy, but it's an example illustration

02:47 12 of a rotary aircraft; is that right?

02:47 13   A.   Yes.

02:47 14   Q.   Okay. Could drones be considered a rotary

02:47 15 aircraft?

02:47 16   A.   Yes.

02:47 17   Q.   Do you think that your invention is applicable

02:47 18 and useful for drones?

02:47 19   A.   I do. I think it's a perfect use for the

02:47 20 invention, especially since the pilot is not in the

02:47 21 aircraft and the visibility of what the aircraft is

02:47 22 doing is restricted.

02:47 23   Q.   All right.

02:47 24   MR. PANKRATZ: Mr. Patterson, if we could

02:47 25 bring up Figure 1 of the '752 patent, please.

KRISTIE M. DAVIS, OFFICIAL COURT REPORTER
U.S. DISTRICT COURT, WESTERN DISTRICT OF TEXAS (WACO)

02:47   1   Thank you.

02:47   2   BY MR. PANKRATZ:

02:47   3   Q.   Mr. Christensen, do you have Figure 1 in front

02:47   4   of you of the '752 patent?

02:47   5   A.   I do.

02:47   6   Q.   What are we seeing here?

02:47   7   A.   This is a figure that shows the different

02:47   8   areas of a flight envelope that we use to illustrate an

02:48   9   example of how the patent could work, and in fact this

02:48   10   is how we had programmed the aircraft to fly for the

02:48   11   Advanced Control Law Project.

02:48   12   Q.   So this is showing what you actually built

02:48   13   onto an aircraft, a working version of your invention?

02:48   14   A.   Yes, sir.

02:48   15   Q.   Okay. And you said "flight envelope." Does

02:48   16   that basically just mean -- well, I'll ask you, what

02:48   17   does that mean in eighth-grader terms?

02:48   18   A.   So for this figure it shows groundspeed on the

02:48   19   bottom axis and the vertical axis. So in this case it

02:48   20   shows a groundspeed envelope. It's just the flight

02:48   21   condition that the aircraft is flying at.

02:48   22   Q.   I see there's a bigger circle and then in the

02:48   23   middle a dot at the center axis.

02:48   24   What are those two circles showing?

02:48   25   A.   So the bigger circle shows the envelope for

02:49   1   automatic hover hold, and in our application that we

02:49   2   used to illustrate the patent, if the pilot wants to

02:49   3   fly the aircraft inside of that circle and release the

02:49   4   controls, it would automatically enter a hover.

02:49   5   The small dot in the middle that has an arrow

02:49   6   pointing to it, it shows position hold. So if the

02:49   7   aircraft got within that circle, so very slow, the

02:49   8   aircraft would enter position hold and hold the

02:49   9   position over the ground.

02:49   10   Q.   So is it fair to say for the pure automatic

02:49   11 hover mode that you described earlier, if the aircraft

02:49   12 is within that bigger circle and the sticks are

02:49   13 released, the aircraft automatically goes and starts

02:49   14 automatically hovering?

02:49   15   A.   Correct.

02:49   16   Q.   Does your Figure 1 illustrate within it the

02:49   17 concepts of high-speed transition to hover mode or

02:49   18 emergency hover hold mode?

02:49   19   A.   It does not.

02:49   20   Q.   So then is it fair to say that Figure 1 of

02:50   21 your patent is just showing some examples of how your

02:50   22 invention could be implemented into an aircraft?

02:50   23   A.   It is. Just for illustrative purposes.

02:50   24   Q.   Was Figure 1 intended to show every single

02:50   25 possible example?

232

02:50   1   A.   No.   The patent's much bigger than that, and

02:50   2   that's what's covered in the claims.

02:50   3   Q.   And the claims, as you understand it, are what

02:50   4   actually define the invention that you have coverage

02:50   5   for, right, sir?

02:50   6   A.   Correct.   The Figure 1 was just an

02:50   7   illustration of how the invention could work.

02:50   8   MR. PANKRATZ: All right.   Mr. Patterson,

02:50   9   if we could go to Column 3, Lines 52 to 53, of this

02:50   10   patent, please.

02:50   11   BY MR. PANKRATZ:

02:50   12   Q.   All right.   I told you we were going to get to

02:50   13   control loops.

02:50   14   This sentence in your and co-inventors' patent

02:51   15   says: The flight control laws described above require

02:51   16   several control loops which are based on their

02:51   17   corresponding axes.

02:51   18   Do you see that, sir?

02:51   19   A.   I do.

02:51   20   Q.   How are control loops -- well, let me back up.

02:51   21   What are control loops?

02:51   22   A.   So in a control loop, and I'll use groundspeed

02:51   23   for example here, there's a desired groundspeed that we

02:51   24   would like the aircraft to fly at, say zero

02:51   25   groundspeed, which would put the aircraft in a hover,

233

02:51   1   and then there's the actual groundspeed that the

02:51   2   aircraft's flying at.

02:51   3   So we compare the desired groundspeed with the

02:51   4   actual, and there's -- we compute the air between those

02:51   5   two, and we have what's called a "feedback control

02:51   6   loop" that's going to take that air and figure out how

02:51   7   we're going to move the surfaces on the aircraft to

02:51   8   minimize and zero out that air and, in fact, keep the

02:51   9   air down if there's any disturbances such as gusts.

02:52   10   Q.   So as I understood what you just described to

02:52   11   me, the control loop gets a target and then wherever

02:52   12   you are, the loop keeps trying to get you as close as

02:52   13   possible to that target?

02:52   14   A.   Correct.

02:52   15   Q.   Now, you also, I think, earlier mentioned the

02:52   16   concept of control logic.

02:52   17   A.   Yes.

02:52   18   Q.   What is control logic?

02:52   19   A.   Control logic looks at the state of the

02:52   20   aircraft and also the pilot's control movements and

02:52   21   determines what control loop we want to engage

02:52   22   depending on the circumstances.

02:52   23   Q.   All right.

02:52   24   MR. PANKRATZ: Mr. Patterson, we're going

02:52   25   to stay in this same spot, but if you could expand out

02:52   1   and just go ahead and show us all the way down to the

02:52   2   bottom of this column.

       3   BY MR. PANKRATZ:

02:53   4   Q.   So now we see that sentence on the top saying

02:53   5   there's going to be several control loops, and then we

02:53   6   see three of them here. I think there might be one

02:53   7   more on the next column going on to the next, but we'll

02:53   8   go here, and I'm going to pick one out here and ask you

02:53   9   about it.

02:53   10   Is forward speed hold an example of a control

02:53   11   loop?

02:53   12   A.   It is.

02:53   13   Q.   What does the forward speed hold control loop

02:53   14   do?

02:53   15   A.   The forward speed hold control loop will close

02:53   16   the air on forward speed to minimize the air and zero

02:53   17   out the forward speed air --

02:53   18   Q.   And it's minimizing -- I'm sorry.

02:53   19   A.   -- between the target and the actual speed of

02:53   20   the aircraft.

02:53   21   Q.   Okay. That's what I was about to ask you

02:53   22   about, whether there was a target.

02:53   23   So there's a target fed to the forward speed

02:53   24   hold control loop, and then the aircraft will attempt

02:54   25   to get to that target?

02:54   1   A.   Yes, sir.

02:54   2   Q.   And that's for, I guess, forward-direction

02:54   3   speed; is that fair?

02:54   4   A.   Yes, sir. For the forward speed (f).

02:54   5   Q.   All right. When the forward speed hold loop

02:54   6   is engaged, will the aircraft simply attempt to hold

02:54   7   the aircraft's current speed?

02:54   8   A.   It could, but it could also hold any other --

02:54   9   any speed, including hover.

02:54   10   Q.   And hover, that's something specifically

02:54   11 contemplated by your patent, right?

02:54   12   A.   Correct.

02:54   13   Q.   In fact, that's in the title?

02:54   14   A.   Yes. The automatic hover hold would hold zero

02:54   15 forward speed.

02:54   16   Q.   Are there any limits on what the target for a

02:54   17 control hold loop could be?

02:54   18   A.   Just within the physical constraints of what

02:54   19 an aircraft is capable of doing.

02:54   20   Q.   So anything from zero up to the maximum speed

02:54   21 of the aircraft?

02:54   22   A.   Yes. It could even be -- for a hovering

02:54   23 aircraft it could be a minus speed. So the aircraft

02:54   24 could be holding a rearward speed.

02:55   25   Q.   And is the forward speed hold loop important

02:55   1   for automatic hover hold?

02:55   2   A.   It is.

02:55   3   Q.   Why do you say that?

02:55   4   A.   It's the main loop that we are controlling to

02:55   5   bring the aircraft back into a hover.

02:55   6   Q.   Now, we see a number of other control loops

02:55   7   listed here starting in this location and then I think

02:55   8   even continuing on the next column.

02:55   9   Do you see all those other control loops, sir?

02:55   10   A.   I do.

02:55   11   Q.   Would any of these other control loops be

02:55   12 helpful for hovering?

02:55   13   A.   Yes. They would.

02:55   14   Q.   Why is that?

02:55   15   A.   So there's four axes that the aircraft needs

02:55   16 to control to hover. There's -- what we already talked

02:55   17 about was the forward (f). We call that longitudinal

02:56   18 axis. There's also a lateral axis which is right and

02:56   19 left. So we need to stop the aircraft from moving

02:56   20 forward (f). We also need to stop the aircraft from

02:56   21 moving left and right.

02:56   22   We also don't want the aircraft to be spinning

02:56   23 around. So that's the directional axis, also known as

02:56   24 the heading of the aircraft. We need to hold the

02:56   25 heading.

02:56   1   And lastly, we don't want the aircraft sinking

02:56   2   down into the ground so we have a vertical axis that we

02:56   3   need to control basically the altitude of the aircraft

02:56   4   above the ground.

02:56   5   Q.   All right.

02:56   6   MR. PANKRATZ: Mr. Patterson, if you

02:56   7   could please bring up Claim 13 from the '752 patent.

02:56   8   BY MR. PANKRATZ:

02:56   9   Q.   All right. Sir, do you see we've got on the

02:56 10   screen -- and I suppose you've turned to it in your

02:56 11   patent -- Claim 13 of the -- of your and your

02:56 12   co-inventors' patent?

02:56 13   Do you see that?

02:56 14   A.   Yes, sir.

02:56 15   Q.   And you've seen this claim before?

02:56 16   A.   I have.

02:57 17   Q.   And I'm not sure if you know this or not, but

02:57 18   that is the claim that the jurors here are going to be

02:57 19   asked to determine whether there is infringement or

02:57 20   not.

02:57 21   A.   I've heard that.

02:57 22   Q.   So looking at Claim 13, do you see that this

02:57 23   claim mentions a handful of different control loops?

02:57 24   A.   It does.

02:57 25   Q.   And the very first control loop is a forward

02:57   1   speed hold loop.

02:57   2   Do you see that?

02:57   3   A.   I do see that.

02:57   4   Q.   And then there is a clause that starts

02:57   5   "wherein," and it says: Wherein the forward speed hold

02:57   6   loop automatically engages under certain conditions.

02:57   7   And you've read this claim before, right, sir?

02:57   8   A.   I have.

02:57   9   Q.   Have you seen anything in the language of

02:57   10 Claim 13 that -- well, actually let me back up before I

02:57   11 ask that.

02:57   12   Based on the language of Claim 13, what is

02:57   13 your understanding of what the forward speed hold loop

02:57   14 is?

02:57   15   A.   It says that the forward speed hold loop will

02:58   16 automatically engage when the pilot returns the

02:58   17 controller to the detent if they're outside of a first

02:58   18 envelope.

02:58   19   Q.   And is your understanding that the forward

02:58   20 speed hold loop is effectively what you described to

02:58   21 the jury just a few minutes ago?

02:58   22   A.   Correct.

02:58   23   Q.   Is there anything in Claim 13, any words, that

02:58   24 would limit what the target speed for the forward speed

02:58   25 hold loop could be?

02:58 1   A.   There's not.

02:58 2   Q.   So it's your understanding, based on the plain

02:58 3   language of Claim 13, that the forward speed hold loop

02:58 4   could be set at a target from anywhere between zero and

02:58 5   the maximum speed of the aircraft?

02:58 6   A.   Yes.   Like I said, even negative speeds.

02:58 7   MR. PANKRATZ: You can take that down,

02:58 8   Mr. Patterson.

02:58 9   BY MR. PANKRATZ:

02:58 10   Q.   How long did it take you and your co-inventors

02:58 11   to develop the solution that's reflected in your

02:59 12   patent?

02:59 13   A.   I started working on this program in October

02:59 14   of 2008, and we were flying on our test aircraft by the

02:59 15   following summer, so about nine months, but we

02:59 16   continued to refine the ideas and design for the next

02:59 17   two years after that.

02:59 18   Q.   And I think you mentioned that y'all built

02:59 19   this technology into an actual aircraft?

02:59 20   A.   We did.

02:59 21   Q.   What kind of aircraft was it?

02:59 22   A.   It was flown on a Bell 412 that we had

02:59 23   borrowed from National Research Council Canada, and

02:59 24   they brought it down to Arlington so we could fly our

02:59 25   control laws on it.

240

02:59   1   Q.   Did y'all do flight testing?

02:59   2   A.   We did.

02:59   3   Q.   About how many hours?

02:59   4   A.   It was about 80 hours' worth of testing.

02:59   5   Q.   How did your solution work?

02:59   6   A.   One of our goals was to be able to put our

02:59   7   executive leadership team, including our CEO, in the

02:59   8   aircraft. And the CEO had no experience at all flying

02:59   9   a helicopter, and with basically no training at all, he

03:00   10   was able to lift the aircraft up, hover it around the

03:00   11   air field in all directions and land the aircraft.

03:00   12   And we actually -- I told you I was humbled

03:00   13   when I was a test pilot and I flew a helicopter. We

03:00   14   turned these advanced control laws off just to see how

03:00   15   he would do without the advanced control laws, and the

03:00   16   safety pilot had to take the aircraft within a couple

03:00   17   seconds.

03:00   18   (Laughter.)

03:00   19   BY MR. PANKRATZ:

03:00   20   Q.   I'm kind of envisioning that scene from the

03:00   21   movies where the helicopter starts going like this, the

03:00   22   beeps starting.

03:00   23   Is that what's happening there?

03:00   24   A.   The safety pilot wouldn't let it get too far.

03:00   25   He knew that this wasn't going to last too long with

—241—

03:00   1   the CEO trying to fly it without the advanced control

03:00   2   laws.

03:00   3   Q.   I'll bet as you waited to put the CEO until --

03:00   4   at the end of all that flight testing; is that fair?

03:00   5   A.   We did. We -- yeah. We had tested it out

03:00   6   quite a bit to make sure that it was ready for the CEO.

03:00   7   Q.   Sir, are you proud of the inventions that you

03:00   8   and your co-inventors came up with?

03:00   9   A.   I'd have to say I'm proud of my company, Bell

03:01   10   Textron, for enabling us and empowering our team to

03:01   11   innovate, and personally I'm just really honored,

03:01   12   humbled and I'll say blessed that -- was able to be a

03:01   13   part of this team and continue to come up with ways

03:01   14   that we can make these aircraft easier to fly.

03:01   15   Q.   Thank you, sir.

03:01   16   MR. PANKRATZ: I pass the witness.

03:01   17   THE WITNESS: Thank you.

03:01   18   CROSS-EXAMINATION

03:01   19   BY MR. YIN:

03:01   20   Q.   Good afternoon.

03:01   21   A.   Good afternoon.

03:01   22   Q.   So counsel just asked you -- confirmed with

03:02   23   you that Claim 13 is the one at issue in this case,

03:02   24   right?

03:02   25   A.   Yes, sir.

242

03:02 1   Q.   Claim 13 does not mention anywhere the word

03:02 2   "hover"?

03:02 3   A.   That's correct.

03:02 4   Q.   Instead Claim 1 does, right?

03:02 5   A.   Yes.

03:02 6   Q.   And Claim 1 is not at issue here?

03:02 7   A.   Correct.

03:02 8   Q.   I believe when you joined the company back

03:02 9   when -- whenever, you were given a document by your

03:02 10   supervisor. It's called ADS-33?

03:02 11   A.   Yes. I was.

03:02 12   Q.   Are you familiar with that?

03:02 13   A.   Yes, sir.

03:02 14   MR. YIN: Your Honor, may I approach?

03:02 15   THE COURT: Of course.

03:02 16   BY MR. YIN:

03:03 17   Q.   Sir, if you'll flip to the top labeled DX-340.

03:03 18   Do you see it?

03:03 19   A.   Yes. I do.

03:03 20   Q.   Take a quick look.

03:03 21   Do you recognize this document?

03:03 22   A.   I do.

03:03 23   Q.   Is this the document that you were given at

03:03 24   the very beginning of your career?

03:03 25   A.   My career with Bell. Yes, sir.

03:03   1   Q.   And you were told to study this document

03:03   2   really hard?

03:03   3   A.   Yes. I was told to learn it.

03:03   4   Q.   Right. So you're really familiar with this

03:03   5   document?

03:03   6   A.   I am.

03:03   7   Q.   And you developed your control laws and

03:03   8   probably many years of your work you used -- you relied

03:03   9   on this document, right?

03:03   10   A.   Correct.

03:03   11   MR. YIN: Your Honor, we move to admit

03:03   12   DX-340.

03:03   13   MR. PANKRATZ: No objections.

03:03   14   THE COURT: It'll be admitted.

        15   BY MR. YIN:

03:04   16   Q.   So now, DX-340's on the screen. I want to

03:04   17   just get some background information from you about

03:04   18   this document real quick.

03:04   19   MR. YIN: If we could go to Page 67 of

03:04   20   this document. That will be -- boy, that was quick.

        21   BY MR. YIN:

03:04   22   Q.   Let's just focus on Table 4. There are a lot

03:04   23   of acronyms here.

03:04   24   If you don't mind, can you explain a few of

03:04   25   them to me? What is UCE?

-244-

03:04 1   A.   UCE stands for usable cue environment. This

03:04 2   is a method that the military uses to determine whether

03:04 3   a visual environment is degraded or not.

03:05 4   Q.   And in the table I see UCE has different

03:05 5   values: 1, 2, 3.

03:05 6   What do they mean?

03:05 7   A.   UCE=1 is essentially a good visual environment

03:05 8   where the pilot can see everything around the aircraft.

03:05 9   UCE=2 is -- and UCE=3 are both degraded visual

03:05 10 environments. UCE=2 is better than UCE=3. It's

03:05 11 typically a night situation where the pilot might have

03:05 12 night vision goggles, but there's not much illumination

03:05 13 to enhance the vision for the pilot.

03:05 14   And UCE=3 is -- could be fog. It could be

03:05 15 brownout, and in this case the pilot really has not a

03:05 16 whole lot of visual cues to determine whether the

03:05 17 aircraft is drifting across the ground. Might not be a

03:05 18 horizon out there where the pilot can see what is the

03:06 19 pitch and roll attitude of the aircraft.

03:06 20   Q.   Under each UCE value there's Level 1 and

03:06 21 Level 2.

03:06 22   What do they mean?

03:06 23   A.   So those are handling qualities levels.

03:06 24 Level 1 being the best where it's fairly easy to fly

03:06 25 the aircraft, and Level 2 being where there's some

245

03:06   1   deficiencies that we would say should be corrected to

03:06   2   make the aircraft easier to fly.

03:06   3   Q.   Just to -- for clarity, this document is a

03:06   4   requirement document, right?

03:06   5   A.   In its name, it's a requirement for handling

03:06   6   qualities for military rotorcraft.

03:06   7   Q.   Who issued this document?

03:06   8   A.   The U.S. Army came up with this document.

03:06   9   Q.   So the U.S. Army issued this requirement

03:06   10   document. So if a company wants to make an aircraft

03:06   11   that would meet the requirements, there are two

03:06   12   different levels of requirements, Level 1 and Level 2,

03:06   13   under each condition?

03:07   14   A.   Correct.

03:07   15   Q.   Okay. I see a lot of acronyms under -- inside

03:07   16   the table. There's RATE, ACAH, and a bunch of others.

03:07   17   What does RATE mean?

03:07   18   A.   RATE is what we call -- all of these acronyms

03:07   19   refer to what we call response types. So it's

03:07   20   basically what is the aircraft going to do when the

03:07   21   pilot puts an input into the controller.

03:07   22   In the case of a RATE response type, if the

03:07   23   pilot were to put a fore or aft input into the

03:07   24   controller, the aircraft would fly in a pitch rate.

03:07   25   Could also be lateral control. It could be roll rate.

03:07   1   If you put an input into the directional controller, it

03:07   2   could be a yaw rate.

03:07   3   Q.   Pitch rate, that means how fast the aircraft

03:07   4   would tilt forward?

03:07   5   A.   Yes, sir. The pitch attitude is essentially

03:07   6   how the aircraft is pointing in the fore or aft

03:08   7   direction.

03:08   8   Q.   So attitude is the angle, RATE is how fast the

03:08   9   angle changes?

03:08   10   A.   Correct.

03:08   11   Q.   And if you look at the fourth column under

03:08   12 ACAH.

03:08   13   Do you see that?

03:08   14   A.   The fourth -- okay. I see --

03:08   15   Q.   Yeah.

03:08   16   A.   Fourth from the left, I see that.

03:08   17   Q.   Yeah. If you look at screen, it's on your

03:08   18 screen too. It should be on your screen.

        19   A.   Correct.

03:08   20   Q.   I see a bunch of things there. There's ACAH,

03:08   21 RCDH, RCHH. I see there's a common pattern here. The

03:08   22 second letter is always C and the last letter is always

03:08   23 H.

03:08   24   Do you know what that means?

03:08   25   A.   Yes, sir.

247

03:08 1   Q.   So C -- you can let me know if I'm right.

03:08 2   C means if I -- if the control stick is not in

03:08 3   detent, that means the pilot is pushing the stick out

03:08 4   of detent, that stick movement would control whatever's

03:09 5   in front of that letter C, right?

03:09 6   A.   Yes, sir.

03:09 7   Q.   So if it says RC, that's -- that means if I

03:09 8   push the stick forward, that's controlling the rate?

03:09 9   A.   Yes, sir.

03:09 10   Q.   If it's AC, if I push the stick forward,

03:09 11   that's going to control the attitude?

03:09 12   A.   Yes, sir.

03:09 13   Q.   And the last letter, H, indicates if you

03:09 14   release the stick, the aircraft is going to hold

03:09 15   something?

03:09 16   A.   Correct.

03:09 17   Q.   That something it's going to hold is indicated

03:09 18   by the letter right before the H?

03:09 19   A.   Correct.

03:09 20   Q.   So if I have HH, like if you look at the one

03:09 21   that's highlighted here in the line hover, RCHH, that

03:09 22   means if I push the stick out of detent, it's

03:09 23   controlling rate.

03:09 24   You can look at the screen. It's underlined

03:09 25   for you on the screen too.

248

03:09 1   A.   Uh-huh.

03:09 2   Q.   And I've -- if I release the stick, it's going

03:10 3   to hover?

03:10 4   A.   No, sir.

03:10 5   Q.   What does that mean?

03:10 6   A.   RCHH means rate command height hold.

03:10 7   Q.   Oh, I'm sorry. So height -- height hold.

03:10 8   A.   Yeah. H stands for height hold.

03:10 9   Q.   So it's going to hold the height?

03:10 10   A.   Correct.

03:10 11   Q.   Okay. So this document actually specifies

03:10 12   hover, right?

03:10 13   A.   Not implicitly.

03:10 14   Q.   Hover is in the table in the first column. It

03:10 15   says so.

03:10 16   A.   These are -- it says it's response types for

03:10 17   hover and low speed. So it's not just for hover.

03:10 18   Q.   So hover is one of the requirements in this

03:10 19   document that you received when you joined Bell?

03:10 20   A.   It's not an explicit response type called out

03:10 21   in ADS-33. Hover hold is never mentioned in ADS-33.

03:10 22   There are other holds that are mentioned in there.

03:11 23   Q.   And these acronyms in the table, they are all

03:11 24   response types, right?

03:11 25   A.   Correct.

03:11   1   Q.   Response types -- by response type, you mean

03:11   2   that however the aircraft is going to behave when the

03:11   3   pilot moves the sticks?

03:11   4   A.   Either moves the stick or releases the stick.

03:11   5   Q.   Right.

03:11   6   MR. YIN: So let's take this down and put

03:11   7   the patent up, '752 patent.

03:11   8   If we can go to Figure 1.

03:11   9   BY MR. YIN:

03:12   10   Q.   Is it correct to say that this figure shows

03:12   11   response types of the invention you came up with?

03:12   12   A.   There are some response types in this figure.

03:12   13   Q.   Like position hold?

03:12   14   A.   Position hold is a response type.

03:12   15   Q.   Automatic hover hold?

03:12   16   A.   That is several response types that are --

03:12   17   that's an umbrella for -- I'll say that's an umbrella

03:12   18   for several response types.

03:12   19   Q.   There's forward speed hold?

03:12   20   A.   There's forward speed hold.

03:12   21   Q.   That's a response type, right?

03:12   22   A.   In the illustration that we provided for the

03:12   23   patent, that is a response type.

03:12   24   Q.   Same thing with lateral speed hold?

03:12   25   A.   Yes. Those were response types that we used

250

03:12 1   to illustrate the patent.

03:12 2   Q.   So in this figure -- the big circle, by the

03:13 3   way, I think you just explained to Textron counsel that

03:13 4   the big circle means -- is -- basically is the boundary

03:13 5   for the automatic hover holding, this figure, right?

03:13 6   A.   In this illustration, yes.

03:13 7   Q.   Right. So I think if we look at the

03:13 8   horizontal axes -- axis --

03:13 9   MR. YIN: Can we highlight that?

03:13 10   That line, right.

       11   BY MR. YIN:

03:13 12   Q.   If we look at that, let's assume there's no

03:13 13 lateral movement, left/right movement. It's just

03:13 14 forward/aft. At the boundary of that circle, my guess

03:13 15 is it's about 10 knots?

03:13 16   A.   That's a good guess.

03:13 17   Q.   So if I'm -- if the aircraft is moving forward

03:13 18 at 11 knots, based on this figure if I release the

03:13 19 stick, if the pilot releases the forward/aft stick,

03:14 20 it's going to hold 11 knots, right?

03:14 21   A.   Based on this figure which is an illustration

03:14 22 of the patent of how it could work.

03:14 23   Q.   So what's described -- what's shown in this

03:14 24 figure tells me that if you release the stick when it's

03:14 25 moving forward -- when the aircraft is moving forward

03:14   1   at 11 knots, it's going to hold 11 knots?

03:14   2   A.   That's how it worked in our advanced control

03:14   3   laws which we illustrated in this figure.

03:14   4   Q.   Same thing in the other direction, the lateral

03:14   5   speed hold, right?

03:14   6   A.   Correct.

03:14   7   MR. YIN: Let's go to Column 3 of the

03:14   8   patent. Let's go to Column 3, Line 52, the same

03:15   9   section that Textron counsel discussed with you.

03:15   10   A.   Okay.

03:15   11   BY MR. YIN:

03:15   12   Q.   What was the forward speed hold here again?

03:15   13   A.   You're talking about Column 52?

03:15   14   Q.   I'm sorry. This is Column 3 --

        15   (Simultaneous speakers.)

        16   BY MR. YIN:

03:15   17   Q.   -- Line 59 maybe.

03:15   18   A.   Line 59.

03:15   19   Q.   Forward speed hold --

03:15   20   A.   Okay.

03:15   21   Q.   -- in parentheses "FSH."

03:15   22   What is this again?

03:15   23   A.   This was one of the control loops that we used

03:15   24   to control the aircraft.

03:15   25   Q.   Is that the same thing as the forward speed

03:16   1   hold in Figure 1?

03:16   2   A.   Slightly different, I think.

03:16   3   Q.   What's the difference?

03:16   4   A.   In Figure 1 it showed an envelope where we

03:16   5   would go into a forward speed hold response type, where

03:16   6   in here we're using the forward speed hold as a loop to

03:16   7   control forward speed. So it's a little different.

03:16   8   Q.   So one is sort of a circuit to make sure the

03:16   9   speed is accurate. The other -- in Figure 1 you were

03:16   10   talking about outside the circle. If you release the

03:16   11   stick, it -- what is going to hold the speed, right?

03:16   12   A.   Correct.

03:16   13   Q.   So Figure 1, that's behavior. Here in this

03:16   14   column it's talking about what's going on at the

03:16   15   circuit level --

03:16   16   A.   Yes, sir. A control loop as I described

03:16   17   previously.

03:16   18   Q.   Sorry.

03:16   19   A.   That's okay.

03:16   20   Q.   Do you understand what it means to engage

03:16   21   forward speed hold loop?

03:16   22   A.   Yes.

03:16   23   Q.   Okay.

03:17   24   MR. YIN: Let's look at Column 5.

03:17   25   Highlight the paragraph starting at Line 21.

253

03:17   1   BY MR. YIN:

03:17   2   Q.   So here it says "CLaw." That's control law,

03:17   3   right?

03:17   4   A.   Yes, sir.

03:17   5   Q.   CLaw logic will automatically initiate and

03:17   6   engage the forward speed hold loop 303 --

03:17   7   A.   Yes.

03:17   8   Q.   -- right?

03:17   9   We can skip the next few words. "When the

03:17   10 longitudinal controller is returned to the detent

03:17   11 position."

03:17   12   Do you see that?

03:17   13   A.   Yes.

03:17   14   Q.   And groundspeed is outside of the AHH region

03:17   15 as shown in Figure 1?

03:17   16   A.   Yes.

03:17   17   Q.   So here we're talking about -- the patent is

03:17   18 talking about the pilot releasing the controller,

03:18   19 releasing the stick, and the aircraft is flying at the

03:18   20 higher speed outside the automatic hover hold circle?

03:18   21   A.   Correct.

03:18   22   Q.   And the behavior here, as we just discussed

03:18   23 with respect to Figure 1, is the aircraft is going to

03:18   24 hold its speed.

03:18   25   A.   Is that a question?

03:18   1   Q.   Is that right?

03:18   2   A.   No.

        3   Q.   No?

03:18   4   A.   Can I explain?

03:18   5   Q.   We just discussed Figure 1, right?

03:18   6   We were talking about Figure 1. You just

03:18   7   confirmed, outside the circle, if the pilot releases

03:18   8   the stick, it's going to hold the speed?

03:18   9   A.   In the application of Figure 1 but not as the

03:18 10   control loop is used here. We just discussed how the

03:18 11   control -- FSH control loop is different than Figure 1.

03:18 12   This paragraph is talking about the control

03:18 13   loop, not -- not the response type that's shown in

03:18 14   Figure 1.

03:18 15   Q.   So let me ask you one more time. When --

03:19 16   we're talking about this paragraph.

03:19 17   When the FSH loop engages, it will maintain

03:19 18   the aircraft's current forward velocity, right?

03:19 19   A.   It could, but it could be any velocity. It's

03:19 20   not -- in accordance with the claims, it's not

03:19 21   specific.

03:19 22   Q.   What'd you say, according to the claim?

03:19 23   A.   According to Claim 13, it's not specific to

03:19 24   hold the current speed.

03:19 25   Q.   I'm sorry. I'm talking about this paragraph

03:19   1   on the screen right now.

03:19   2   A.   Okay.

03:19   3   Q.   So let me ask you one more time.

03:19   4   When the FSH loop engages, talking about this

03:19   5   paragraph, it will maintain the aircraft's current

03:19   6   forward velocity, right?

03:19   7   A.   No. It could.

03:19   8   Q.   Now, do you remember you were deposed?

03:19   9   A.   Yes, sir.

03:19 10   Q.   Yeah. I think my colleague deposed you. I

03:20 11   don't remember when. And you were asked this

03:20 12   question --

03:20 13   THE COURT: You need to tell the page and

03:20 14   line.

03:20 15   MR. YIN: Yeah. Let's put it up.

03:20 16   Mr. Christensen's deposition transcript, Page 90,

03:20 17   Line 15.

03:20 18   MR. PANKRATZ: Objection, Your Honor.

03:20 19   Shouldn't he allow the witness to review this before

03:20 20   it's published?

03:20 21   THE COURT: If it -- I'm assuming it's

03:20 22   going to be the same question.

03:20 23   MR. YIN: Exactly identical question.

03:20 24   THE COURT: If it's the same question,

03:20 25   then he can just show it.

03:20   1   MR. PANKRATZ: Thank you, Your Honor.

03:20   2   MR. YIN: Page 90, Line 15.

03:20   3   BY MR. YIN:

03:20   4   Q.   This is your deposition testimony.

03:20   5   When the -- question: When the FSH loop

03:20   6   engages, it will maintain the aircraft's current

03:20   7   forward velocity, right?

03:20   8   Answer: Yes.

03:20   9   That was your testimony, right?

03:20   10   A.   Yes, sir.

03:20   11   Q.   Okay.

03:20   12   A.   But that was --

03:20   13   MR. YIN: We can take it down now.

03:21   14   A.   Can I explain?

03:21   15   BY MR. YIN:

03:21   16   Q.   No.

03:21   17   A.   Okay.

03:21   18   Q.   I appreciate the offer, though.

03:21   19   A.   All right.

03:21   20   THE COURT: You'll have -- your lawyer --

03:21   21   if this lawyer doesn't want to allow you to explain,

03:21   22   then your lawyer gets to get up and ask you and the

03:21   23   jury can hear it at that time.

03:21   24   THE WITNESS: Okay.

03:21   25   BY MR. YIN:

257

03:21   1   Q.   So on the -- we talked about the forward (f)

03:21   2   direction.

03:21   3   The patent also talks about lateral movement,

03:21   4   left and right --

03:21   5   A.   Yes.

03:21   6   Q.   -- right?

03:21   7   MR. YIN: Can we pull out -- call out

03:21   8   Column 6, the paragraph starting at Line 35?

03:21   9   Highlight the first sentence from CLaw to

03:21   10   Figure 1.

03:21   11   BY MR. YIN:

03:22   12   Q.   So this sentence, we're again talking about

03:22   13   what was -- what kind of behavior the aircraft would

03:22   14   engage in as shown in Figure 1, right?

03:22   15   So it says: CLaw logic will automatically

03:22   16   engage -- initialize and engage the LSH loop.

03:22   17   That's lateral speed hold loop?

03:22   18   A.   Yes, sir.

03:22   19   Q.   When the lateral controller is returned to the

03:22   20   detent position.

03:22   21   That's when the pilot releases the stick?

03:22   22   A.   Yes.

03:22   23   Q.   And groundspeed is outside of the AHH region

03:22   24   as shown in Figure 1.   So --

03:22   25   A.   Yes.

258

03:22   1   Q.   -- the big circle. So if it's outside the big

03:22   2   circle, pilot releases the stick, the aircraft should

03:22   3   hold its lateral speed?

03:23   4   A.   This paragraph that we're reading right now --

03:23   5   Q.   Right.

03:23   6   A.   -- it doesn't specify what lateral speed the

03:23   7   aircraft will hold. So it could be, as I said in the

03:23   8   longitudinal, it could be any speed.

03:23   9   Q.   But it should be similar to what happens in

03:23   10 forward speed hold loop, same thing, right?

03:23   11   A.   Yes.

03:23   12   Q.   We just discussed the forward speed hold?

03:23   13   A.   Yes.

03:23   14   Q.   Okay. Couple more questions. Let me see.

03:24   15   Textron has never successfully commercialized

03:24   16 the invention of the '752 patent, right?

03:24   17   A.   As far as I know.

03:24   18   Q.   Is that a no?

03:24   19   A.   I'm not exactly sure what applications that

03:24   20 Textron has used this application -- this invention in.

03:24   21 I know that it was intended to be used on the 525, but

03:24   22 I'm not part of that program, and I don't know if it --

03:24   23 and the 525 hasn't been certified yet either. So...

03:24   24   Q.   So you're saying you don't know the answer to

03:24   25 the question?

03:24 1   A.   Yes. I don't know the answer.

03:25 2   Q.   All right.

03:25 3   MR. YIN: Let's put up deposition

03:25 4 transcript Page 186, Line 24 to Page 187, Line 1.

03:25 5 BY MR. YIN:

03:25 6   Q.   Question: Has Textron ever successfully

03:25 7 commercialized the invention of the '752 patent?

03:25 8   Answer: No.

03:25 9   That was your testimony, right?

03:25 10   A.   That was my testimony at that time based on

03:25 11 the knowledge I had.

03:25 12   Q.   I think that's all I have for now. Thank you

03:25 13 very much.

03:25 14   A.   You're welcome.

03:25 15   Q.   Appreciate it.

03:25 16   THE COURT: Counsel?

03:25 17   REDIRECT EXAMINATION

03:25 18 BY MR. PANKRATZ:

03:26 19   Q.   I think you wanted to explain a couple of

03:26 20 things there, Mr. Christensen. Let's see if we can't

03:26 21 get those explanations out.

03:26 22   A.   Yes, sir.

03:26 23   Q.   Counsel was asking you some questions about

03:26 24 Figure 1 in particular.

03:26 25   A.   Yes.

260

03:26   1   Q.   Is Figure 1 intended to be the limits of your

03:26   2   invention?

03:26   3   A.   It is not. It was just used for illustration

03:26   4   purposes to show how the invention could be applied.

03:26   5   MR. PANKRATZ: Mr. Patterson, if you

03:26   6   could bring up the patent at Column 11, the paragraph

03:26   7   starting at Line 10, and just highlight that -- or not

03:26   8   highlight, but zoom in on that whole paragraph. Column

03:26   9   11, Line 10, that whole paragraph.

03:26   10   BY MR. PANKRATZ:

03:26   11   Q.   You and your co-inventors made that very clear

03:27   12   in your patent that Figure 1 was just an

03:27   13   illustrating -- illustrative example, right?

03:27   14   A.   Correct.

03:27   15   Q.   And here we see a paragraph that tells anybody

03:27   16   who's -- who doubts that exactly that point, right?

03:27   17   A.   Correct.

03:27   18   Q.   The particular embodiments disclosed above are

03:27   19   illustrative only. That's what you say to the world,

03:27   20   right?

03:27   21   A.   Yes, sir.

03:27   22   Q.   And then down below I think that -- let's see

03:27   23   if I can find it. Starting with "accordingly." This

03:27   24   is at Line 16: Accordingly, the protection sought

03:27   25   herein is as set forth in the description.

03:27   1   Oh, I'm sorry. It's the next one. It is

03:27   2   apparent that an invention with significant advantages

03:27   3   has been described and illustrated. Although the

03:27   4   present invention is shown in a limited number of

03:27   5   forms, it is not limited to just these forms.

03:27   6   Do you see that?

03:27   7   A.   I do.

03:27   8   Q.   Okay. And your understanding is that language

03:28   9   is telling the world that those figures are just

03:28   10   examples, right?

03:28   11   A.   Yes, sir.

03:28   12   Q.   And do you understand that the claims of your

03:28   13   patent are what truly define the invention?

03:28   14   A.   I am.

03:28   15   Q.   Okay. When you were being asked those

03:28   16   questions, including the one that counsel put on the

03:28   17   screen, were they referring you to Claim 13?

03:28   18   A.   No. We weren't discussing Claim 13 at that

03:28   19   time.

03:28   20   Q.   Do you want to explain what you were talking

03:28   21   about at that point?

03:28   22   A.   We were talking about Figure 1 which is how we

03:28   23   implemented during our Advanced Control Law Project,

03:28   24   and specifically in that case, in Figure 1, if you

03:28   25   release the controls, it would hold the current

262

03:28   1   airspeed. That's how we applied it in the advanced

03:28   2   control laws, but that is not limiting to the patent.

03:28   3   That was just one way that we applied it and that we

03:28   4   came up with the illustration in Figure 1.

03:28   5   Q.   And just to reiterate what I think you pointed

03:28   6   out earlier, does Claim 13 have any language in it that

03:29   7   restricts it to holding current forward speed?

03:29   8   A.   It does not and nor does the paragraph that we

03:29   9   were spending some time on. It doesn't specify a

03:29   10   current speed in that paragraph.

03:29   11   Q.   And let's do go look at -- we were looking at

03:29   12   Column 5, and he was focusing you on -- around Line 21

03:29   13   that started, but let's go down just a little bit and

03:29   14   look at the paragraph starting at Line 31.

03:29   15   A.   Yes.

03:29   16   Q.   That second sentence states: The FSH function

03:29   17   will be able to stabilize more quickly at any

03:29   18   groundspeed or airspeed.

03:29   19   Do you see that?

03:29   20   A.   I do.

03:29   21   Q.   FSH, what does that stand for?

03:29   22   A.   That's the forward speed hold loop that we

03:29   23   were discussing in the previous paragraph. So there it

03:29   24   says it can stabilize at any airspeed or groundspeed.

03:30   25   Q.   So what does that tell you as to whether the

03:30   1   forward speed hold function, when engaged, either

03:30   2   requires or does not require locking in current speed?

03:30   3   A.   It does not require. Like I said, that's one

03:30   4   possible speed it could hold, and that's what we used

03:30   5   in our illustration, but it's not limiting.

03:30   6   Q.   All right, sir. Thank you for your service

03:30   7   and thank you for your testimony.

03:30   8   A.   Thank you.

03:30   9   MR. YIN: I have a couple of questions to

03:30   10 follow up.

03:30   11   Let's look at Column 5 of the patent.

03:31   12   RECROSS-EXAMINATION

03:31   13 BY MR. YIN:

03:31   14   Q.   Let's call out the Line 21 through 35.

03:31   15   Counsel for Textron just discussed with you

03:31   16 the statement in -- at Line 32 through 35, the FSH

03:31   17 function will be able to stabilize more quickly at any

03:31   18 groundspeed or airspeed by initializing to the

03:31   19 approximate pitch attitude required to hold that speed.

03:31   20   You were talking about the forward speed hold

03:31   21 loop, right?

03:31   22   A.   Yes. That's what FSH stands for, the forward

03:31   23 speed hold loop.

03:31   24   Q.   Basically that's the forward speed hold

03:31   25 control circuit?

03:32   1   A.   Yes.

03:32   2   Q.   The feedback loop you were talking about?

03:32   3   A.   Yes. The feedback loop, trying to minimize

03:32   4   forward speed air.

03:32   5   Q.   The paragraph you and I discussed earlier was

03:32   6   the previous paragraph?

03:32   7   A.   Yes.

03:32   8   Q.   I was focusing on engagement of the forward

03:32   9   speed hold loop.

03:32   10   Do you remember?

03:32   11   A.   Yes.

03:32   12   Q.   What does it mean to engage the forward speed

03:32   13   hold loop?

03:32   14   A.   That's where the logic would engage that loop

03:32   15   for it to minimize the air between the actual speed and

03:32   16   the target speed of the aircraft, where the target

03:32   17   speed could be any speed.

03:32   18   Q.   In that paragraph up there, starting at

03:32   19   Line 21, in that particular -- in that sentence, CLaw

03:32   20   logic will automatically initialize and engage the

03:32   21   forward speed hold loop when the longitudinal

03:32   22   controller is returned to the detent position and

03:32   23   groundspeed is outside of the AHH region, as shown in

03:32   24   Figure 1.

03:33   25   What does "engage the FSH loop" mean?

03:33   1   A.   That means to minimize the forward speed air

03:33   2 between the target and the actual speed of the aircraft

03:33   3 where the target could be any speed.

03:33   4   MR. YIN: Let's pull up deposition

03:33   5 transcript, Page 130, Lines 12 through 19.

        6 BY MR. YIN:

03:33   7   Q.   Question: And looking, again, at Line 21

03:33   8 where it says, the CLaw logic will automatically

03:33   9 initialize and engage the FSH loop.

03:33 10   Answer: Yes.

03:33 11   Question: What does it mean to engage the

03:33 12 forward speed hold loop?

03:33 13   Answer: That means to capture the speed hold

03:33 14 velocity that you have when it's engaged.

03:33 15   That was your testimony, right?

03:33 16   A.   Yes, sir. With regards to Figure 1 --

03:34 17   Q.   That's all I need. Thank you very much.

03:34 18   THE COURT: Counsel? Counsel?

03:34 19   MR. YIN: I'm sorry. I apologize.

03:34 20   THE COURT: Don't cut him off. Let him

03:34 21 answer.

        22   MR. YIN: Sorry.

        23 BY MR. YIN:

03:34 24   Q.   Go ahead.

03:34 25   A.   The context of that was with regards to

03:34 1   Figure 1 in our application in the Advanced Control Law

03:34 2   Project where we did, in fact, hold current speed, but

03:34 3   that doesn't limit the patent.

03:34 4   Q.   Thank you.

03:34 5   A.   Yes.

03:34 6   MR. PANKRATZ: One question, Your Honor?

03:34 7   FURTHER REDIRECT EXAMINATION

03:34 8   BY MR. PANKRATZ:

03:34 9   Q.   In all the questioning at your deposition and

03:34 10   today, did counsel for the defendant ever ask you about

03:34 11   Claim 13?

03:34 12   A.   No.

03:34 13   Q.   Thank you, sir.

03:34 14   THE COURT: May this witness be excused?

03:34 15   MR. YIN: Your Honor, subject to our

03:34 16   previous agreement about the separate issue, yes.

03:34 17   THE COURT: Okay.

03:34 18   Thank you for being here, sir. Thank you

03:34 19   for your service.

03:34 20   THE WITNESS: Thank you. Appreciate it.

03:34 21   THE COURT: May he remain in the

03:35 22   courtroom or does he need to remain outside?

03:35 23   MR. YIN: He probably needs to be

03:35 24   outside.

03:35 25   THE COURT: Very good. Ladies and

03:35   1   gentlemen, we're going to take our afternoon recess.

03:35   2   Remembering my instructions, we are in recess for about

03:35   3   ten minutes.

03:35   4   THE BAILIFF: All rise.

03:35   5   (Jury exited the courtroom.)

03:35   6   THE COURT: You may be seated.

03:35   7   Is there anything we need to take up?

03:35   8   MR. MEEK: Not for plaintiff, Your Honor.

03:35   9   MR. SCHROEDER: Nothing for defendants

03:35   10   right now, Your Honor.

03:35   11   THE COURT: Okay. We'll be back in ten

03:35   12   minutes.

03:35   13   (Recess taken.)

03:53   14   THE BAILIFF: All rise.

03:53   15   THE COURT: Please remain standing for

03:53   16   the jury.

03:53   17   (Jury entered the courtroom.)

03:53   18   THE COURT: Thank you. You may be

03:53   19   seated.

03:53   20   You may call your next witness, please.

03:53   21   MS. MAYNE: Your Honor, plaintiff calls

03:53   22   by deposition Sugar Huang.

03:53   23   THE COURT: Okay. Before we do that, let

03:53   24   me explain something to the jury.

03:53   25   So I told you earlier about depositions.

03:53   1   Not only can you use depositions when you are examining

03:53   2   a witness, but occasionally there are folks who are

03:53   3   unable to attend the trial, and so we allow the lawyers

03:54   4   to play the depositions. Again, when the deposition

03:54   5   was taken, it was under oath. The lawyers were all

03:54   6   present.

03:54   7   And as you heard in the opening charge,

03:54   8   the reason we have you here is because you are the

03:54   9   judges of the facts and the judges of the evidence.

03:54   10 It's up to you to listen to the witnesses and determine

03:54   11 whether or not you think they're all -- you should

03:54   12 believe everything they say or nothing or some

03:54   13 combination.

03:54   14   When you hear the witness testify at the

03:54   15 deposition, it's the same rule. You should treat a

03:54   16 witness that appears by deposition with equal dignity

03:54   17 as if they were here, which means, again, you can

03:54   18 believe everything they say or nothing or any bit of

03:54   19 it.

03:54   20   I just don't want you to think because a

03:54   21 witness was not here in person that they don't deserve

03:54   22 the same credibility that you would give anyone else.

03:54   23 It's -- you all are the judges. It's entirely up to

03:54   24 you all to determine what evidence you accept and what

03:55   25 evidence you don't.

269

03:55   1   Counsel, you may begin the deposition.

03:55   2   (Video deposition of Sugar Huang played as follows.)

03:55   3   Q.   Good morning. Can you please state your full

03:55   4   name for the record?

03:55   5   A.   My Chinese name is S-h-a-o-g-e, last name

03:55   6   H-u-a-n-g. My English name is Sugar Huang.

03:55   7   Q.   What factors are considered when setting the

03:55   8   price?

03:55   9   A.   Some factors would be considered

03:55   10   comprehensively.

03:55   11   THE INTERPRETER: Let me make a

03:55   12   correction.

03:56   13   A.   It would be an overall consideration involving

03:56   14   several factors.

03:56   15   Q.   Can you think of any of the factors?

03:56   16   A.   For example, the expected gross profit --

03:56   17   gross rate of profit for the company. Okay. That's

03:56   18   correct.

03:56   19   Q.   When you said "the company," are you referring

03:56   20   to DJI as a whole?

03:56   21   A.   Yes.

03:56   22   Q.   What other factors can you think of with

03:56   23   regards to price setting?

03:56   24   A.   The situation about other competitive

03:56   25   products.

270

03:57   1   Q.   What other factors?

03:57   2   A.   Market demand.

03:57   3   Q.   What do you mean by market demand?

03:57   4   A.   Demand for the product by the target

03:57   5   customers.

03:57   6   Q.   How do you know the demand for the product by

03:57   7   the target customers?

03:57   8   A.   The company would make a judgment based on the

03:57   9   market survey and also based on some subjective

03:57   10 judgment.

03:57   11   Q.   So DJI uses market survey information when

03:58   12 setting the price for its products?

03:58   13   A.   The market survey result is one of the factors

03:58   14 to be considered.

03:58   15   Q.   So we have the gross rate of product profits,

03:58   16 competitive situations, market demand, survey

03:58   17 information.

03:58   18   Can you think of any other factors that are

03:58   19 considered when setting prices?

03:58   20   A.   To my understanding, the overall functions of

03:58   21 the products will also be considered.

03:58   22   Q.   Does that mean the features that the drones

03:58   23 have?

03:58   24   A.   That's correct.

03:58   25   Q.   Let me back up again.

03:58   1   I understand you said for products

03:59   2   manufactured in China, the flow would go from DJI

03:59   3   Baiwang to iFlight to sales entities in the U.S.; is

03:59   4   that right?

03:59   5   A.   That is correct.

03:59   6   Q.   And you said that revenue for product sales in

03:59   7   the United States first goes to pay for the products;

03:59   8   is that right?

03:59   9   A.   That's correct. And a big portion of the

03:59 10   sales revenue are used -- or were used to make goods

03:59 11   payment.

03:59 12   Q.   That payment would come from the U.S. sales

03:59 13   entities to iFlight, right?

03:59 14   A.   That's correct.

03:59 15   Q.   Does iFlight pay any company besides DJI

03:59 16   Baiwang for the products that are accused of

03:59 17   infringement of this case?

03:59 18   A.   For products that were sold from DJI Baiwang

04:00 19   to iFlight, iFlight would make the corresponding goods

04:00 20   payment to Baiwang.

04:00 21   With regard to the products in suit in this

04:00 22   case, iFlight would not make payment to any other

04:00 23   entities.

04:00 24   Q.   Am I also remembering correct that we

04:00 25   discussed the flow of products from China to the

04:00   1   United States would go from the manufacturing entity,

04:00   2   DJI Baiwang, to iFlight, and then U.S. entities would

04:01   3   purchase the products from iFlight; is that right?

04:01   4   A.   That's correct. The product will be sold from

04:01   5   Shenzhen DJI Baiwang to iFlight, and iFlight would sell

04:01   6   the products to the entities that's doing sales in the

04:01   7   United States.

04:01   8   (End of video deposition.)

04:01   9   MS. MAYNE: Your Honor, plaintiff next

04:01   10   calls by deposition Fox Li.

04:01   11   (Video deposition of Fox Li played as follows.)

04:01   12   Q.   Good morning. Could you please state your

04:01   13   full name for the record?

04:01   14   A.   Good morning. My name is Fox Li.

04:02   15   Q.   Can you clarify what you mean when you say

04:02   16   it's one factor or consideration in the cross-license?

04:02   17   A.   For cross-licensing, there are many factors to

04:02   18   be considered. In addition to what you mentioned

04:02   19   earlier, we might also consider factors such as the

04:02   20   market, factors pertaining to users and et cetera, many

04:02   21   factors. What you've mentioned just now was only one

04:02   22   of the factors.

04:02   23   Q.   When you say the "factors pertaining to

04:02   24   users," do you mean what features users are interested

04:02   25   in?

04:02 1   A.   You can understand it that way.

04:03 2   Q.   So you would agree with me that DJI had notice

04:03 3   of the '909 patent at least as of September 12th, 2019?

04:03 4   A.   This letter is written this way.

04:03 5   Q.   Setting aside information that came from

04:03 6   counsel, has anyone at DJI ever told you that they

04:03 7   don't believe DJI's products infringe Textron's

04:03 8   patents?

04:03 9   A.   No.

04:03 10   (End of video deposition.)

04:03 11   MS. MAYNE: Plaintiff next calls by

04:03 12 deposition Litian Zhang.

04:03 13   (Video deposition of Litian Zhang played as follows.)

04:03 14   Q.   Will you please state your full name for the

04:03 15 record?

04:03 16   A.   Litian Zhang. L-i-t-i-a-n, last name is

04:03 17 Z-h-a-n-g.

04:03 18   Q.   How long have you worked at DJI?

04:04 19   A.   I believe I joined the company in 2015.

04:04 20   Q.   What is your current job title?

04:04 21   A.   Robot algorithm engineer.

04:04 22   Q.   Do you agree that the basic purpose of the

04:04 23 Follow Me mode is to use the target's device to send

04:04 24 GPS coordinates to the drone so that the drone can

04:04 25 track the target at a certain speed?

—274—

04:04   1   A.   Correct.

04:04   2   Q.   So in order to follow the target, the target's

04:04   3   device transmits data to the drone that communicates

04:04   4   the target's position and movement; is that correct?

04:04   5   A.   What are you referring to when you use the

04:05   6   word "movement"?

04:05   7   Q.   I'm referring to, for example, the inertial

04:05   8   movement or speed of the target.

04:05   9   A.   Could I please ask what you mean by "inertial

04:05   10   movement"?

04:05   11   Q.   So by inertial movement, I'm referring to, for

04:05   12   example, the speed or velocity of the target device.

04:05   13   A.   According to my understanding, the drone does

04:06   14   not need to receive the speed of the app.

04:06   15   Q.   The drone does receive the GPS coordinates of

04:06   16   the target device; is that correct?

04:06   17   A.   It will receive the longitude and latitude of

04:06   18   the GPS coordinates of the app. That's correct.

04:06   19   Q.   Does the drone use the longitude and latitude

04:07   20   GPS coordinates of the app to determine the target's

04:07   21   velocity?

04:07   22   A.   On the plane, we can estimate the speed by --

04:08   23   by -- on the plane we can estimate the speed through

04:08   24   the position -- through the -- on the drone, we could

04:08   25   estimate the speed through the position difference --

04:09   1   or the difference in position -- through position

04:09   2   differential.

04:09   3   Q.   So the drone can estimate the speed of the

04:09   4   target through the position differential of the target?

04:09   5   A.   Yes. The software that run on the drone can

04:09   6   do that.

04:09   7   Q.   Does the drone have a receiver that receives

04:09   8   the latitude and longitude coordinates from the target

04:09   9   device?

04:09   10   A.   When you use the word "receiver," are you

04:10   11   talking about a software portion that process the data

04:10   12   or something else?

04:10   13   Q.   I'm generally asking about a hardware

04:10   14   component that receives the data that can then be used

04:10   15   by software.

04:10   16   A.   We indeed have a hardware component to receive

04:10   17   the data sent from the app --

04:10   18   Q.   You said before this feature would calculate a

04:10   19   velocity -- velocity command to give the flight

04:10   20   control.

04:10   21   What did you mean by that?

04:10   22   A.   You can understand it in the following way: A

04:11   23   drone is comprised of multiple components or different

04:11   24   parts in terms of the software.

04:11   25   For example, a portion of it is flight

04:11   1   control, which does the bottom-level control for the

04:11   2   drone, and there's another portion of the software is

04:12   3   responsible for a higher level logic and control. The

04:12   4   second portion that I just mentioned would send the

04:12   5   velocity command to the first portion.

04:12   6   Perhaps my explanation this way can be

04:12   7   helpful.

04:12   8   Q.   Does the velocity command command the drone to

04:12   9   fly at a certain velocity?

04:12   10   A.   What do you mean when you use the word a

04:13   11   "certain velocity"? "Certain"?

04:13   12   Q.   Is the velocity command commanding the drone

04:13   13   to fly at, for example, 45 miles per hour?

04:13   14   A.   That's not what I meant. The velocity command

04:13   15   that we just mentioned about actually is an output of

04:13   16   the control -- controller, and this value, for most of

04:13   17   the time, is a variable value. It is not a fixed

04:14   18   value. It is not a constant value.

04:14   19   Q.   What do you mean by "variable value"?

04:14   20   A.   Meaning the value changes in -- most of the

04:14   21   time.

04:14   22   Q.   What is the purpose of the velocity command?

04:14   23   A.   The velocity command that I mentioned about

04:14   24   that was sent -- okay. The velocity command that was

04:15   25   sent to the flight control module was to get the drone

04:15   1   to fly according to the velocity command.

04:15   2   It was to -- the purpose of it was to let

04:15   3   the -- flight control module to let the drone to fly at

04:15   4   that velocity.

04:15   5   CHECK INTERPRETER: Check interpreter's

04:15   6   rendition: The velocity command sent to the flight

04:15   7   control module is for causing the flight control module

04:15   8   to control the drone to fly according to the command.

04:15   9   Q.   But the purpose of the velocity command that

04:16   10   is sent to the flight control module is to cause the

04:16   11   flight control module to control the drone to fly

04:16   12   according to that command?

04:16   13   A.   Yes.

04:16   14   Q.   In order to track the target, does the drone

04:16   15   try to match its own velocity with the target's

04:16   16   velocity?

04:16   17   A.   From the control standpoint, what we control

04:16   18   is the relative position.

04:16   19   Q.   What do you mean, we control the relative

04:16   20   position?

04:16   21   A.   Meaning that I would need to maintain a

04:17   22   relatively fixed position relative to the GPS position

04:17   23   of the app.

04:17   24   Q.   To do that, does the drone try to match the

04:17   25   velocity of the target?

04:17 1   A.   I believe what we maintain is the relative

04:17 2   position.

04:17 3   Q.   Is there code for Follow Me for executing

04:17 4   Follow Me missions?

04:17 5   A.   On the drone, indeed, there is a chip that's

04:18 6   mainly responsible for executing the Follow Me-related

04:18 7   codes.

04:18 8   Q.   Do DJI drones with the Follow Me feature have

04:18 9   sensors that measure the position and speed of the

04:18 10   drone?

04:18 11   A.   I believe so.

04:18 12   Q.   Those sensors provide the position and speed

04:18 13   data of the drone?

       14   A.   (Translated answer not played.)

04:19 15   Q.   So a Phantom 4 Pro with Follow Me can obtain

04:19 16   the position of the drone using GNSS?

04:19 17   A.   Correct.

04:19 18   Q.   So a Phantom 4 Pro with Follow Me can use GNSS

04:19 19   to obtain velocity data?

04:19 20   A.   Correct.

04:19 21   Q.   So are there any other sensors on a Phantom 4

04:19 22   Pro that can measure the drone's velocity data?

04:19 23   A.   Actually, in our earlier discussion, when we

04:20 24   used the word "sensor," we actually used the word

04:20 25   "sensor" in its broad sense. For example, GPS or GNSS,

04:20   1   this sensor is also a sensor in its broad meaning.

04:20   2   On P4P -- on Phantom 4 Professional, we have

04:21   3   dual -- we have a dual-vision or dual-eye system.

04:21   4   CHECK INTERPRETER: Check interpreter's

04:21   5   rendition: On P4P, or Phantom 4 Professional, we have

04:21   6   a stereo vision system.

04:21   7   A.   We have the stereo vision system which can

04:21   8   also be considered as a broad sensor. It can output

04:22   9   velocity data.

04:22   10   Q.   In Follow Me mode, is there a processor that

04:22   11 controls the rotors of the drone so that the drone will

04:22   12 follow the tracked target?

04:22   13   A.   While the drone is flying, our ESC is always

04:22   14 controlling the motor.

04:22   15   Q.   So the ESC in Follow Me mode controls the

04:22   16 motor of the drone?

04:22   17   A.   That's correct.

04:22   18   Q.   How does the Follow Me code decide the

04:23   19 velocity of the drone at which to track the target?

04:23   20   A.   What velocity are you referring to? Are you

04:23   21 referring to the velocity of the drone in the world

04:23   22 coordinate system?

04:23   23   Q.   Yes.

04:23   24   A.   (Translated answer not played.)

04:24   25   Q.   Does the controller also use the estimated

—280—

04:24   1   velocity of the target to calculate the velocity

04:24   2   command?

04:24   3   A.   (Translated answer not played.)

04:24   4   Q.   Yes. I'm referring to the estimated velocity

04:24   5   of the target obtained by the drone with position

04:24   6   differentiation.

04:24   7   A.   Our controller would use this velocity.

04:24   8   Q.   Okay. So to recap, the controller -- in

04:25   9   addition to the position of the target, the controller

04:25   10 would also use the estimated velocity of the target

04:25   11 estimated by drone with the position differentiation to

04:25   12 calculate the velocity command?

04:25   13   A.   The position differential, I'm talking about

04:25   14 the position differential of the target. If that's the

04:25   15 case, then my answer is yes.

04:25   16   Q.   Has DJI made any changes to the accused

04:25   17 products because of this case?

04:25   18   A.   In the group that I was in charge of -- or I'm

04:26   19 in charge of, no.

04:26   20   Q.   Did you review any of Textron's patents

04:26   21 asserted in this case?

04:26   22   A.   No.

04:26   23   Q.   I've introduced into the share file what has

04:26   24 been previously marked as Exhibit 1.

04:26   25   Have you ever seen this patent before now?

04:26	1	A. I don't believe so.
04:26	2	Q. Can you tell me why any of the accused DJI
04:26	3	drones don't infringe this patent?
04:26	4	A. I don't even know what this patent is talking
04:26	5	about.
04:26	6	Q. So you don't have an opinion as to whether any
04:26	7	of the features we've discussed today infringe this
04:26	8	patent?
04:26	9	A. I don't have any opinion.
04:27	10	(End video deposition.)
04:27	11	MS. MAYNE: Your Honor, plaintiff next
04:27	12	calls by deposition, Chuyue Ai.
04:27	13	(Video deposition of Chuyue Ai played as follows.)
04:27	14	Q. Can you please state your full name for the
04:27	15	record?
04:27	16	A. Ai Chuyue, C-h-u-y-u-e, last name A-i.
04:27	17	Q. What's your current job title at DJI?
04:27	18	A. I am currently a director or person in charge
04:27	19	of a department.
04:27	20	Q. What department are you in charge of?
04:27	21	A. Software.
04:27	22	Q. Does your department handle a particular part
04:27	23	of DJI's software?
04:28	24	A. Yes.
04:28	25	Q. (Question not played.)

04:28   1   A.   The mobile. For example, software run on the

04:28   2   cell phone or on the remote control.

04:28   3   Q.   How many people are in your department?

04:28   4   A.   Roughly a little over 150.

04:28   5   Q.   Are you the manager for all of those people?

04:28   6   A.   Yes.

04:28   7   Q.   Users of DJI's drones in the United States

04:28   8   have used DJI's ActiveTrack feature?

04:28   9   A.   Yes.

04:28   10   Q.   Users of DJI's drones in the United States

04:28   11 have used DJI's Follow Me feature, correct?

04:28   12   A.   Yes.

04:28   13   Q.   Users of DJI's drones in the United States

04:29   14 have used DJI's hovering technology?

04:29   15   A.   Yes.

04:29   16   Q.   Have you seen any of Textron's asserted

04:29   17 patents in this case?

04:29   18   A.   No.

04:29   19   Q.   Do you have an opinion that the accused

04:29   20 products do or don't infringe the '909 patent?

04:29   21   A.   I don't have any opinion.

04:29   22   Q.   Has DJI made any changes to its source code in

04:29   23 light of any of Textron's infringement allegations for

04:29   24 any of the patents that we went through?

04:29   25   A.   In terms of the codes that my department is

04:29   1   responsible for, no.

04:29   2   Q.   At least from the user software side, DJI

04:29   3   doesn't have any plans to change its source code in

04:29   4   light of Textron's infringement allegations for any of

04:30   5   the patents we just talked about?

04:30   6   A.   Correct.

04:30   7   Q.   As the head of the software group, do you

04:30   8   perform patent searches?

04:30   9   A.   I do not.

04:30   10   Q.   Does anybody in your group have the job duty

04:30   11 to search for patents to see if your technology is

04:30   12 infringing on any other company's patents?

04:30   13   A.   Not within our department.

04:30   14   Q.   Now that you know about Textron's patents and

04:30   15 that DJI is continuing to do business in the United

04:30   16 States, are you going to go study those patents to

04:30   17 check to see if DJI's products are infringing?

04:30   18   A.   I would not.

04:30   19   Q.   And as the head of the software group with 150

04:30   20 employees under you, are you going to tell any of your

04:30   21 employees to go study Textron's patents?

04:30   22   A.   I would not.

04:31   23   (End of video deposition.)

04:31   24   MS. MAYNE: Plaintiff next calls by

04:31   25 deposition, Zhimeng Shang.

284

04:31 1   (Video deposition of Zhimeng Shang played as follows.)

04:31 2   Q.   Can you please state your full name for the

04:31 3   record?

04:31 4   A.   Zhimeng Shang.

04:31 5   Q.   You work for DJI, correct?

04:31 6   A.   Yes.

04:31 7   Q.   How long have you worked at DJI?

04:31 8   A.   More than seven years.

04:31 9   Q.   What is your current job title at DJI?

04:31 10   A.   Senior engineer.

04:31 11   Q.   Does every DJI drone have a processor?

04:31 12   A.   They all have processors. Some have more than

04:32 13   one.

04:32 14   Q.   Why does a DJI drone have more than one

04:32 15   processor?

04:32 16   A.   Because DJI drones are loaded with many

04:32 17   things, including cameras, sensors, and other things.

04:32 18   So there are a lot of loads and calculation.

04:32 19   Q.   In every DJI drone there's a flight control

04:32 20   processor that handles flight control functionality,

04:32 21   correct?

04:32 22   A.   Yes.

04:32 23   Q.   Have you been mainly responsible for work

04:32 24   related to flight control since you started at DJI in

04:32 25   July 2015?

04:32   1   A.   Yes.

04:32   2   Q.   Your team is responsible for writing the

04:33   3   flight control code, correct?

04:33   4   A.   Yes.

04:33   5   Q.   Do you have full access to DJI's flight

04:33   6   control code?

04:33   7   A.   Yes.

04:33   8   Q.   Do you understand that DJI has not given us

04:33   9   full access to DJI' flight control code due to export

04:33   10   control restrictions in China?

04:33   11   A.   Yes. Yes, I do.

04:33   12   Q.   So what I'm asking for is when is the date

04:33   13   when DJI first either made, used, sold, offered for

04:33   14   sale or imported a drone with hover technology in the

04:33   15   United States?

04:33   16   A.   I believe this could go back to the founding

04:34   17   days of Dajiang because our products, even the first

04:34   18   generation, included this -- this functionality.

04:34   19   Q.   And an angular velocity vector has components

04:35   20   for pitch rate, roll rate, and yaw rate, correct?

04:35   21   A.   Yes.

04:35   22   Q.   Does the right stick also control how fast

04:35   23   you're moving in the horizontal plane?

04:35   24   A.   Yes. How much I move the stick results in the

04:35   25   speed of the flight movement. So if I push it all the

04:35   1   way to the full -- to the end -- fully to the end, then

04:36   2   the aircraft would reach its maximum speed.

04:36   3   CHECK INTERPRETER: Check interpreter's

04:36   4   rendition: Yes, the magnitude of the stick's movement

04:36   5   corresponds to the magnitude of the speed. So if I

04:36   6   push the stick all the way to the end, the drone goes

04:36   7   the maximum speed.

04:36   8   Q.   Is the same true for pushing the left stick

04:36   9   left or right in terms of how much you push left or

04:36   10 right controls the yaw rate?

04:36   11   A.   Yes. If I turn it to the full, then the drone

04:36   12 would be -- it would reach the maximum yaw angle.

04:37   13   CHECK INTERPRETER: Check interpreter's

04:37   14 rendition: Yes. If I push it all the way, the drone

04:37   15 would rotate at its maximum yaw speed.

04:37   16   Q.   Does pushing the left stick up or down control

04:37   17 the drone's altitude?

04:37   18   A.   Yes.

04:37   19   Q.   What control stick movement controls the

04:37   20 drone's pitch?

04:37   21   A.   The forward/backward of the right stick --

04:37   22   Q.   How would a user modify a pitch angle?

04:37   23   A.   Through the amount of movement in the control

04:38   24 stick to half or to full. So the -- so the altitude

04:38   25 can control the pitch angle.

04:38   1   CHECK INTERPRETER: Check interpreter's

04:38   2   rendition: That is through the amount of movement of

04:38   3   the control stick. For example, when you move it all

04:38   4   the way or halfway, it will result in different

04:38   5   attitude angles. And that results in different pitch

04:38   6   angles.

04:38   7   Q.   Yes. How far you move the right stick left or

04:38   8   right indirectly controls the roll rate through

04:39   9   changing the magnitude of the roll angle, correct?

04:39 10   A.   Yes. It's the same as the pitch movement.

04:39 11   Q.   If the control -- the right control stick is

04:39 12   centered, the drone will hold its forward and backward

04:39 13   position, correct?

04:39 14   A.   Yes.

04:39 15   Q.   And the drone will also hold its forward speed

04:39 16   at zero, correct?

04:39 17   A.   Yes.

04:39 18   Q.   And if the control stick is centered, the

04:39 19   drone will not move left or right?

04:39 20   A.   Correct. Actually, it will not move left or

04:40 21   right or forward and backward -- or backward if the

04:40 22   control stick is centered.

04:40 23   Q.   So if both sticks are centered, will the DJI

04:40 24   drone hold vertical speed at zero?

04:40 25   A.   Okay. If both sticks are centered, then the

288

04:40 1   drone would be hovering, stationary.

04:40 2   Q.   So the DJI drone would hold its vertical speed

04:40 3   at zero with both sticks centered?

04:40 4   A.   Yes. Actually, if the DJI drone wants to have

04:41 5   a vertical speed at zero, it only has to put the left

04:41 6   stick in the center.

04:41 7   Q.   Okay. So in either scenario where the left

04:41 8   stick is centered or both the left and right sticks are

04:41 9   centered, a DJI drone will hold its vertical speed at

04:41 10   zero?

04:41 11   A.   Yes.

04:41 12   Q.   That also means that, in both of those

04:41 13   scenarios, the drone's altitude will be holding

04:41 14   constant at whatever the altitude is?

04:41 15   A.   Yes.

04:41 16   Q.   And back to the right control stick. If the

04:41 17   right stick is centered, there's no speed to the left

04:41 18   or right directions, correct?

04:41 19   A.   Yes. And also forward or backward.

04:41 20   Q.   Let me ask it differently --

04:42 21   A.   There's no speed forward or backward.

04:42 22   Q.   Let me ask it a little bit differently. If

04:42 23   the right stick is centered, a DJI drone will hold its

04:42 24   forward, backward, left and right speed at zero,

04:42 25   correct?

04:42   1   A.   Yes.

04:42   2   Q.   In mode 2 when the left stick is centered, a

04:42   3   DJI drone will hold its heading, correct?

04:42   4   A.   Yes.

04:42   5   Q.   Moving the right control stick up or down

04:42   6   controls forward and backward movement, correct?

04:42   7   A.   Yes. Yes.

04:42   8   Q.   The amount of movement of the right control

04:42   9   stick up or down controls forward or backward speed,

04:43   10 correct?

04:43   11   A.   Yes. But I neglected to -- to mention

04:43   12 something that I would like to add. So there are

04:43   13 two -- there are two mode in the -- in the drones.

04:43   14 There are two flight modes, a normal mode or speed

04:44   15 mode, and an AT attitude -- AT mode.

04:44   16   CHECK INTERPRETER: Check interpreter's

04:44   17 rendition: A normal mode or sports mode and then ATTI

04:44   18 mode. That's all.

04:44   19   Q.   Centering the left control stick will cause

04:44   20 the drone to hold its current altitude, correct?

04:44   21   A.   Yes.

04:44   22   Q.   Centering the left control stick will cause

04:44   23 the drone to hold a zero vertical speed, correct?

04:44   24   A.   Yes.

04:44   25   Q.   Centering the left control stick will cause

04:44 1   the drone to hold heading?

04:44 2   A.   Yes.

04:45 3   Q.   And if both the left and right control sticks

04:45 4   are centered, the drone will then hover in its place,

04:45 5   correct?

04:45 6   A.   If it's in the normal sports mode. If it's in

04:45 7   the ATTI mode, it would not be hovering.

04:45 8   Q.   What about the sport mode?

04:45 9   A.   Sport mode and the normal mode are the same.

04:45 10   It would hover in place.

04:45 11   Q.   Okay. So in the normal mode, if all the

04:45 12   control sticks are centered, the drone will hover in

04:45 13   place, correct?

04:45 14   A.   Yes.

04:45 15   Q.   In ATTI mode, if the drone cannot hover and

04:46 16   the user isn't controlling the sticks, does the drone

04:46 17   just sort of drift away if -- if it gets blown by the

04:46 18   wind?

04:46 19   A.   Yes. The horizontal -- in the horizontal

04:46 20   direction, it could get blown by the wind.

04:46 21   Q.   Is one of the reasons that DJI has hover hold

04:46 22   technology so that the drone won't drift away?

04:46 23   A.   I think wind proofing is one of the functions.

04:46 24   Q.   When you say "wind proofing," you're referring

04:46 25   to preventing the wind from causing the drone to drift

291

04:47 1   away, correct?

04:47 2   A.   Yes.

04:47 3   Q.   What hardware component on a DJI drone

04:47 4   receives the signal that tells the DJI drone the

04:47 5   current position of the control stick?

04:47 6   A.   There is a -- we have a wireless communication

04:47 7   module.

04:47 8   Q.   The wireless communication module on DJI's

04:47 9   drones receives the signal telling the drone the

04:47 10   current position of the control stick, correct?

04:47 11   A.   Yes.

04:47 12   Q.   The wireless communication module is a

04:47 13   separate physical component from the flight control

04:47 14   processor?

04:47 15   A.   Yes.

04:47 16   Q.   When the wireless communication module

04:48 17   receives a signal telling it the current position of

04:48 18   the control stick, does the wireless communication

04:48 19   module pass the information about the current position

04:48 20   of the control stick to the flight control processor?

04:48 21   A.   Yes.

04:48 22   Q.   What information does the flight control code

04:48 23   receive about the current stick position?

04:48 24   A.   Regarding the stick position, there are four

04:48 25   channels, each channel ranges between -1 to +1 --

292

04:48   1   between -1 and +1.

04:48   2   Q.   What do you mean when you refer to "four

04:49   3   channels"?

04:49   4   A.   Remember, the right stick has forward, back,

04:49   5   left, right; and the left stick has up, down, left,

04:49   6   right. So altogether, four directions.

04:49   7   Q.   What does a -- the -1 value tell the flight

04:49   8   control code?

04:49   9   A.   Let me give you an example. With the right

04:50   10 stick for the forward/backward, if I push it all the

04:50   11 way up, it would have the value of 1. If it's all the

04:50   12 way down, it's a value of -1. And if it's at the

04:50   13 center, it would be zero.

04:50   14   Q.   Is the same true for the left stick?

04:50   15   A.   Yes. The left stick, all the way to the left

04:50   16 is +1, all the way to the right is -1.

04:50   17   The opposite. All the way to the left is -1,

04:50   18 all the way to the right is +1.

04:51   19   Q.   What does a DJI drone do with the current

04:51   20 stick position values?

04:51   21   A.   In different modes, we would set it to

04:51   22 different commands. In the normal or sport mode, 1

04:51   23 would be set to the maximum speed, -1 would be maximum

04:51   24 speed in the opposite direction -- -1 would be the

04:52   25 maximum speed in the other direction.

04:52   1   CHECK INTERPRETER: Check interpreter's

04:52   2   rendition: In the normal mode and sports mode, we

04:52   3   would map 1 to maximum velocity -- we would map 1 to

04:52   4   maximum velocity and -1 to maximum velocity in the

04:52   5   opposite direction.

04:52   6   Q.   The four channels are up/down, left/right,

04:52   7   forward/backward and yaw?

04:52   8   A.   Yes.

04:52   9   Q.   DJI's drones receive data that provides a

04:52 10   range of values for those four channels?

04:52 11   A.   Yes.

04:52 12   Q.   The values range from -1 to +1, correct?

04:52 13   A.   Yes.

04:52 14   Q.   Are there control loops for controlling drone

04:53 15   flight within a DJI drone?

04:53 16   A.   Yes.

04:53 17   Q.   If a DJI drone is in normal sports mode, the

04:53 18   amount of the movement of the stick is mapped to a

04:53 19   velocity command or an attitude command that is passed

04:53 20   into the control loops?

04:53 21   A.   If it's in the normal sports mode, it would

04:53 22   only be mapped to a velocity command, not the -- an

04:53 23   attitude command.

04:53 24   Q.   So when the stick is in the center position,

04:53 25   the control loops cause the drone to go into a hover

04:53 1   status and activate position hold; is that right?

04:54 2   A.   Yes.   But the -- my speed needs to be under a

04:54 3   certain threshold.   Beyond that, the drone would brake,

04:54 4   brake -- be -- put on brake.

04:54 5   Q.   The drone speed needs to be under a certain

04:54 6   threshold to enter the position hold; is that right?

04:54 7   A.   Yes.

04:54 8   Q.   What is the speed threshold that you need to

04:54 9   be under to enter position hold?

04:54 10   A.   It would be a .1-meter per second, small

04:55 11   speed.

04:55 12   Q.   And above the .1-meter per second speed

04:55 13   threshold, the drone can't enter position hold, right?

04:55 14   A.   Correct.   It would be put on brake.

04:55 15   Q.   How do the control loops react when they learn

04:55 16   that the stick positions are centered?

04:55 17   A.   Using the horizontal movement as example, when

04:55 18   the stick is in the center position, my first step is

04:55 19   to brake and get the speed to zero.

04:56 20   When the speed is below the threshold I just

04:56 21   mentioned above, the drone would be in the hover

04:56 22   position.

04:56 23   CHECK INTERPRETER: Check interpreter's

04:56 24   rendition: When the speed is below the threshold I

04:56 25   just mentioned, the drone would enter into hover,

04:56   1   holding its position.

04:56   2   Q.   So let's say that the drone is moving in

04:56   3   forward flight and the user then releases the stick to

04:56   4   the center position.

04:56   5   Can you tell me what happens within the

04:56   6   control loops from that point?

04:56   7   A.   (Translated answer not played.)

04:57   8   Q.   The user is in forward flight and releases the

04:57   9   control stick. The drone will then start to

04:57   10   decelerate, correct?

04:57   11   A.   Yes.

04:57   12   Q.   Deceleration is known as the braking state; is

04:57   13   that right?

04:57   14   A.   Yes.

04:57   15   Q.   Once the drone decelerates below the

04:57   16   threshold -- the speed threshold, the drone will enter

04:57   17   position hold, correct?

04:57   18   A.   Yes.

04:57   19   Q.   And the speed threshold for entering position

04:57   20   hold is .1 meters per second, correct?

04:57   21   A.   Yes.

04:57   22   Q.   Mr. Shang, DJI's code has a control loop for

04:57   23   commanding position, correct?

04:57   24   A.   Yes.

04:58   25   Q.   DJI's code has a control loop for commanding

| 04:58 | 1 | velocity, correct? |

04:58   1   velocity, correct?

04:58   2   A.   Yes.

04:58   3   Q.   DJI's code has a control loop for commanding

04:58   4   attitude, correct?

04:58   5   A.   Yes.

04:58   6   Q.   DJI's code has a control loop for commanding

04:58   7   angular velocity, correct?

04:58   8   A.   Yes.

04:58   9   Q.   DJI's code has a control loop for commanding

04:58   10   allocation, correct?

04:58   11   A.   Yes.

04:58   12   Q.   DJI's code has a control loop for commanding

04:58   13   allocation, correct?

04:58   14   A.   Yes.

04:58   15   Q.   DJI's code has a control loop for commanding

04:58   16   motor control?

04:58   17   A.   Yes.

04:58   18   Q.   Look at Paragraph 31.

04:59   19   DJI's code has control loops for horizontal

04:59   20   flight in both the forward/backward directions and

04:59   21   left/right directions, correct?

04:59   22   A.   Yes.

04:59   23   Q.   Let's go to Paragraph 36.

04:59   24   DJI's code has control loops for controlling

04:59   25   directional flight, correct?

04:59   1   A.   Yes.

04:59   2   Q.   I'm going to direct your attention to

04:59   3   Paragraph 42.

04:59   4   DJI's code has control loops for controlling

05:00   5   vertical flight, correct?

05:00   6   A.   Yes.

05:00   7   Q.   Now direct your attention to Paragraph 40.

05:00   8   DJI's code has a control loop for commanding

05:00   9   vertical position?

05:00   10   A.   Yes.

05:00   11   Q.   DJI's code has -- has a control loop for

05:00   12   commanding vertical velocity?

05:00   13   A.   Yes.

05:00   14   Q.   DJI's flight control code has a control loop

05:00   15   for controlling the drone's position in the forwards

05:00   16   and backwards direction?

05:00   17   A.   Yes.

05:00   18   Q.   There is a control loop in DJI's flight

05:00   19   control loop that includes control for the drone's

05:00   20   forward and backwards speed, correct?

05:00   21   A.   Yes. We -- we refer to it as horizontal

05:01   22   velocity control.

05:01   23   Q.   That control loop also receives data about the

05:01   24   remote controller's stick movement, correct?

05:01   25   A.   Yes.

05:01   1   Q.   And that control loop can receive data that

05:01   2   indicates that the remote control stick position is

05:01   3   centered, right?

05:01   4   A.   Yes.

05:01   5   Q.   And if the data indicates a centered right

05:01   6   control stick, the control loop will cause the drone to

05:01   7   decelerate and hold a zero forward speed, correct?

05:01   8   A.   (Translated answer not played.)

05:02   9   Q.   When the drone is in position hold, the drone

05:02   10 does its best to hold its forward speed at zero,

05:02   11 correct?

05:02   12   A.   No. As I mentioned earlier with the

05:02   13 wind-blowing scenario, it will do its best to hold its

05:02   14 position and the speed may not be zero.

05:02   15   CHECK INTERPRETER: Check interpreter's

05:02   16 rendition: No. In the case we discussed earlier, when

05:02   17 the drone drifts away with the wind blowing, it holds

05:03   18 its current position. And the speed is not necessarily

05:03   19 zero.

05:03   20   Q.   DJI's flight control code has a control loop

05:03   21 for controlling left and right movement of the drone,

05:03   22 right?

05:03   23   A.   Yes. It's the same as the forward/backward

05:03   24 movement.

05:03   25   Q.   DJI's flight control code has a control loop

05:03 1   for controlling the drone's position in the left and

05:03 2   right directions, correct?

05:03 3   A.   Yes.

05:03 4   Q.   DJI's flight control code has a control loop

05:03 5   for controlling the drone's speed in the left and right

05:03 6   directions, correct?

05:03 7   A.   Yes.

05:03 8   Q.   If the data indicates that the right control

05:03 9   stick is centered, the control loop for controlling

05:03 10   left and right speed will cause the drone to decelerate

05:04 11   and hold a zero left and right speed, correct?

05:04 12   A.   No.   Just like for the forward/backward

05:04 13   movement, the first would be a braking action.   And

05:04 14   only when the speed falls below a threshold would it --

05:04 15   would it come to a hold position.

05:04 16   Q.   If the right control stick is centered, the

05:05 17   control loop will, once the drone is holding its

05:05 18   position, also cause the drone to hold its left and

05:05 19   right speed at zero, correct?

05:05 20   A.   Yes.   Unless there are winds or other

05:05 21   scenarios causing the drone to deviate from its

05:05 22   position, just like in the forward/backward scenarios.

05:05 23   Q.   DJI's flight control code includes control

05:05 24   loops for directional movement around the yaw axis,

05:05 25   correct?

300

05:05   1   A.   Yes.

05:05   2   Q.   That code includes a control loop for

05:06   3   controlling the drone's yaw, correct?

05:06   4   A.   Yes.

05:06   5   Q.   The control loop for controlling the drone's

05:06   6   yaw receives data about control stick movement,

05:06   7   correct?

05:06   8   A.   Yes.

05:06   9   Q.   If the data indicates the left control stick

05:06   10   is centered, the control loop for controlling the yaw

05:06   11   will cause the drone to hold its current heading,

05:06   12   correct?

05:06   13   A.   Yes.

05:06   14   Q.   DJI's flight control code includes a loop that

05:06   15   controls the torsion cases of a drone?

05:06   16   A.   Yes. Torsion is the same movement as yaw that

05:06   17   was mentioned earlier.

05:06   18   Q.   One of the yaw cases is called

05:07   19   TORS_LOCK_LOCKED.

05:07   20   Have you heard of that one?

05:07   21   A.   Yes.

05:07   22   Q.   In that scenario, that means that the drone is

05:07   23   not yawing?

05:07   24   A.   Yes.

05:07   25   Q.   The drone is holding its heading constant in

05:07 1   that scenario, correct?

05:07 2   A.   Yes.

05:07 3   Q.   DJI's flight control code has a control loop

05:07 4   for controlling the drone's vertical position?

05:07 5   A.   Yes.

05:07 6   Q.   That control loop controls the drone's

05:07 7   altitude, up and down?

05:07 8   A.   Yes.

05:07 9   Q.   The control loop for controlling the drone's

05:07 10 altitude receives data about the remote controller's

05:07 11 stick movement, correct?

05:07 12   A.   Yes.

05:08 13   Q.   If that data indicates that the left control

05:08 14 stick is centered, the control loop for controlling the

05:08 15 drone's altitude will cause the drone to maintain the

05:08 16 drone's current altitude?

05:08 17   A.   Yes. Just like in the horizontal movement,

05:08 18 there first would be a braking action. When the speed

05:08 19 falls below a threshold, it would enter a position

05:08 20 hold.

05:08 21   Q.   And that position hold would include holding

05:08 22 the drone's current altitude; is that right?

05:08 23   A.   Yes.

05:08 24   Q.   The control loop for controlling the drone's

05:08 25 vertical speed receives data about the control stick

05:09   1   movement, correct?

05:09   2   A.   Yes.

05:09   3   Q.   If the -- if the command data indicates a

05:09   4   centered left control stick, the vertical speed control

05:09   5   loop will cause the drone to decelerate to, and hold, a

05:09   6   zero vertical speed?

05:09   7   A.   No.   Just like for horizontal movement, what

05:09   8   it's holding is not the speed.   It's holding the

05:09   9   current position.

05:09   10   Q.   If the data indicates a centered left control

05:09   11   stick and there's no wind, holding the current position

05:09   12   will also cause the drone to hold the -- a zero

05:09   13   vertical speed; is that right?

05:09   14   A.   Yes.   Zero position error means zero speed

05:10   15   error -- speed command.   Zero position error means zero

05:10   16   speed command.

05:10   17   Q.   In a position hold the drone is holding its

05:10   18   current altitude, right?

05:10   19   A.   Yes.

05:10   20   Q.   And when you're holding your current altitude,

05:10   21   the drone doesn't have a vertical speed, either up or

05:10   22   down, right?

05:10   23   A.   Yes.   Except for wind or other causes -- other

05:11   24   scenarios causing deviation of the position.

05:11   25   Q.   If the data indicates that the left control

05:11   1   stick is out of center, then the vertical speed control

05:11   2   loop will cause the drone to move up or down at some

05:11   3   vertical speed that's being commanded, right?

05:11   4   A.   Yes. Yes. But it's only when the left

05:11   5   control stick is out of the center in up-and-down

05:12   6   movement. If it's out of center in the left/right

05:12   7   movement, it could -- it would still be in the hold

05:12   8   position.

05:12   9   Q.   The motor then carries out the commanded or

05:12   10   desired rotational speed?

05:12   11   A.   But -- yes, but strictly speaking, our motors

05:12   12   do not make rotational speed control. They only

05:12   13   conduct a voltage control.

05:12   14   Q.   If you increase the voltage of the motors,

05:13   15   that will lead to an increase in rotational speed; is

05:13   16   that right?

05:13   17   A.   Yes.

05:13   18   Q.   What is the attitude control loop?

05:13   19   A.   The attitude control loop controls the

05:13   20   attitude of rotation along the three axes.

05:13   21   Q.   The three axes being the X-axis through the

05:13   22   nose of the aircraft, the Y-axis to the left and right

05:13   23   of the aircraft, and the Z-axis to the vertical?

05:13   24   A.   Yes.

05:14   25   Q.   What is the vert -- hover braking code

05:14   1   checking for in Line 1422?

05:14   2   A.   It's checking to see whether my current

05:14   3   vertical velocity is less than my predefined expected

05:14   4   velocity.

05:14   5   CHECK INTERPRETER: Check interpreter's

05:14   6   rendition: It's checking whether my current vertical

05:14   7   velocity is less than the configured threshold

05:14   8   velocity.

05:14   9   Q.   What does the horizontal hover standby command

05:14   10 the drone to do?

05:14   11   A.   Similar to the vertical hover standby, it

05:15   12 controls the horizontal movement at desired velocity.

05:15   13   Q.   When is the horizontal hover standby state

05:15   14 activated?

05:15   15   A.   When my velocity command is not zero.

05:15   16   Q.   So to summarize this, a DJI drone switches

05:15   17 from hover standby state to the hover braking state

05:15   18 when the user releases the control stick to a center

05:15   19 position, correct?

05:15   20   A.   Yes. Although there is another situation, as

05:16   21 mentioned earlier, the emergency braking.

05:16   22   Q.   The drone decelerates towards zero speed,

05:16   23 correct?

05:16   24   A.   Yes.

05:16   25   Q.   But the drone is not yet holding position when

05:16   1   it's in the braking state, correct?

05:16   2   A.   Yes.

05:16   3   Q.   Do all of the DJI drones have a horizontal

05:16   4   brake threshold?

05:16   5   A.   Yes.

05:16   6   Q.   Earlier in the day you referenced a brake

05:16   7   threshold of .1 meters per second. Is that the

05:16   8   horizontal brake threshold?

05:16   9   A.   Yes. Most of our aircraft have

05:17   10 .01-meter-per-second braking threshold, although there

05:17   11 may be exceptions with other configurations.

05:17   12   CHECK INTERPRETER: Check interpreter's

05:17   13 rendition: Yes. Most of our aircrafts have

05:17   14 0.1-meter-per-second braking threshold, although there

05:17   15 may be exceptions with our configurations.

05:17   16   Q.   The IMU is one type of sensor that DJI uses to

05:17   17 provide position information; is that right?

05:17   18   A.   Yes.

05:17   19   Q.   GPS is another type of sensor that DJI uses to

05:17   20 provide position information?

05:17   21   A.   Yes. But let me mention that GPS is satellite

05:18   22 navigation system, GNS.

05:18   23   CHECK INTERPRETER: GNSS.

05:18   24   A.   GNSS, global navigation satellite system.

05:18   25   THE INTERPRETER: GNSS, global navigation

05:18   1   satellite system.

05:18   2   Q.   Is that the same or different from GPS?

05:18   3   A.   GPS is merely one type of signal within the

05:19   4   GNSS.

05:19   5   Q.   Have you reviewed any of Textron's asserted

05:19   6   patents in this case?

05:19   7   A.   No.

05:19   8   Q.   Have you seen any of Textron's asserted

05:19   9   patents in this case?

05:19   10   A.   No.

05:19   11   (End of video deposition.)

05:19   12   MS. MAYNE: Plaintiff calls next by

05:19   13 deposition, Gavin Chen.

05:19   14   THE COURT: About how long will that

05:19   15 deposition take?

05:19   16   MS. MAYNE: Just a few minutes, Your

05:19   17 Honor.

05:19   18   MR. MEEK: This is our last witness, Your

05:19   19 Honor, for the day.

05:19   20   THE COURT: Could I have counsel --

05:19   21   (Video deposition of Gavin Chen played as follows.)

05:19   22   Q.   Could you please state your name for the

05:19   23 record?

05:19   24   A.   Z-h-u-o-w-e-i. Last name, C-h-e-n.

05:20   25   Q.   You work for DJI, correct?

05:20 1   A.   Correct.

05:20 2   Q.   After you completed your product trainee role,

05:20 3   what was your next role at DJI?

05:20 4   A.   Software product manager.

05:20 5   Q.   And that's your current role?

05:20 6   A.   Yes.

05:20 7   Q.   When did you start your role as software

05:20 8   product manager?

05:20 9   A.   2019.

05:20 10   Q.   You've been a software product manager at DJI

05:20 11   since -- for three years, right?

05:20 12   A.   Yes.

05:20 13   Q.   What are your job responsibilities as a

05:20 14   software product manager?

05:20 15   A.   It would also involve discussions with users

05:21 16   to find out whether our functions are easy to use or

05:21 17   not or are used well or not, and also try to help them

05:21 18   to resolve some of the issues. And also the -- to

05:21 19   inspect and accept certain functions.

05:21 20   Q.   What do you mean by inspect or -- and accept

05:21 21   certain functions?

05:21 22   A.   Meaning that I would try to use the functions

05:22 23   or function myself.

05:22 24   Q.   After you would use the function yourself, how

05:22 25   would you -- what would you use that information for?

05:22   1   A.   To use what information? I just use the

05:22   2   function directly myself.

05:22   3   Q.   You learn how to use the function and then you

05:22   4   did something with the knowledge you gained, right?

05:22   5   A.   I would discuss with my colleagues about

05:22   6   possibly a particular function are not good while --

05:22   7   while being used.

05:22   8   Q.   Would you talk to your colleagues in

05:23   9   engineering about the functions?

05:23   10   A.   I would discuss with the app development

05:23   11   engineer.

05:23   12   Q.   Would you suggest changes to the functions

05:23   13   that you had used?

05:23   14   A.   Yes.

05:23   15   Q.   One of your job duties as a software product

05:23   16   manager is to use a particular feature and then suggest

05:23   17   changes to the feature if you think the change is

05:23   18   needed; is that right?

05:23   19   A.   Yes.

05:23   20   Q.   Part of your job wouldn't be to study whether

05:23   21   it's easy to use a feature if it weren't important to

05:23   22   DJI that its features are easy to use, right?

05:23   23   A.   I just use it myself and provide suggestions.

05:24   24   I do not need to worry whether it is important or not.

05:24   25   Q.   Has DJI ever implemented an improvement or

05:24   1   change that you suggested to the DJI drones?

05:24   2   A.   Yes.

05:24   3   Q.   When you first learned about the lawsuit, did

05:24   4   you go and do any investigation on your own about the

05:24   5   lawsuit?

05:24   6   A.   No.

05:24   7   Q.   You haven't read Textron's patent infringement

05:24   8   complaint against DJI?

05:24   9   A.   I have not.

05:24   10   Q.   You haven't read Textron's infringement

05:24   11   contentions against DJI?

05:24   12   A.   I have not.

05:24   13   Q.   Have you heard anyone in the software group

05:24   14   talking about investigating whether DJI infringes

05:25   15   Textron's patents?

05:25   16   A.   I have not heard of it.

05:25   17   Q.   Have you yourself asked anybody in the

05:25   18   software group to go investigate whether DJI infringes

05:25   19   Textron's patents?

05:25   20   A.   I have not.

05:25   21   Q.   Have you seen any of Textron's asserted

05:25   22   patents in this case?

05:25   23   A.   No.

05:25   24   Q.   So today at your deposition is the first time

05:25   25   you've seen any of Textron's asserted patents, correct?

310

05:25   1   A.   Yes.

05:25   2   Q.   You're aware that Textron's patents are

05:25   3   available for review for free on the Internet?

05:25   4   A.   I know that all the patents can be seen on the

05:25   5   Internet.

05:25   6   Q.   You haven't investigated whether ActiveTrack

05:25   7   infringes any of Textron patents?

05:25   8   A.   That's correct. I have not investigated it.

05:26   9   Q.   Are you aware of any attempts by DJI to change

05:26   10   the design of any of the apps to avoid infringing

05:26   11   Textron's patents?

05:26   12   A.   I don't know.

05:26   13   Q.   You're not personally going to suggest any

05:26   14   changes to DJI's apps or products based on this

05:26   15   lawsuit, are you?

05:26   16   A.   I would not do any changes because of this

05:26   17   lawsuit.

05:26   18   Q.   Now that you know about Textron's patents, are

05:26   19   you going to go talk with anybody in the engineering

05:26   20   group or the software group to see how you can ensure

05:26   21   that DJI is not infringing Textron's patents?

05:26   22   A.   I would not do it.

05:26   23   Q.   After this deposition, are you going to go

05:27   24   read Textron's patents?

05:27   25   A.   (Translated answer not played.)

05:27   1   Q.   Since you've been working at DJI, have you

05:27   2   received any training on what to do about another

05:27   3   company's patent rights?

05:27   4   A.   I have not.

05:19   5   (End of video deposition.)

05:27   6   MR. MEEK: Your Honor, that's the last of

05:27   7   the depositions.

05:27   8   THE COURT: Could I have one counsel from

05:27   9   each side up here?

05:27   10   (Bench conference.)

05:27   11   THE COURT: By the way, my compliments to

05:27   12 both of you.   I thought the openings were very good.

05:27   13 All the clerks thought so as well, and I've seen a few

05:27   14 openings by now.

05:27   15   Is your next witness an expert?

05:27   16   MR. MEEK: It is, and it's about a

05:27   17 two-hour direct.

05:27   18   THE COURT: What I would like to do is

05:27   19 have you put him on and just prove him up.

05:28   20   MR. MEEK: That's what we were thinking

05:28   21 about doing.   We qualify him.

05:28   22   THE COURT: And then move to qualify him

05:28   23 and then take a break for the afternoon.

05:28   24   Does that work?

05:28   25   MR. SCHROEDER: Your Honor, there's one

05:28   1   thing we noticed. There was one answer from one of the

05:28   2   videos that was played, it was actually one of DJI's

05:28   3   counters, the translation was not played.

        4   THE COURT: Why don't we fix that tonight

        5   and play it tomorrow?

05:28   6   MR. SCHROEDER: That's fine.

05:28   7   MR. MEEK: We can replay it if we need

05:28   8   it.

05:28   9   (Bench conference concludes.)

05:28   10   THE COURT: Counsel, will you call your

05:28   11 next witness, please?

05:28   12   MR. MEEK: Your Honor, plaintiffs call

05:28   13 Dr. Bill Michalson.

05:28   14   (The witness was sworn.)

05:29   15   DIRECT EXAMINATION

05:29   16 BY MR. RICH:

05:29   17   Q.   Good evening, Dr. Michalson.

05:29   18   A.   Good evening.

05:29   19   Q.   Can you please introduce yourself to the jury?

05:29   20   A.   Sure. My name's Bill Michalson. I am a

05:29   21 professor at Worcester Polytechnic Institute in

05:29   22 Worcester, Massachusetts.

05:29   23   Q.   Why are you appearing at trial tonight,

05:29   24 Dr. Michalson?

05:29   25   A.   I'm appearing at trial here at the request of

05:29   1   Textron. And hopefully, I'll be able to try to explain

05:29   2   some of the technology associated with the patents and

05:29   3   some of the rationale for my opinions about the

05:29   4   patents.

05:29   5   Q.   Before we get to your infringement opinions,

05:29   6   can you please tell the jury a little bit about

05:29   7   yourself?

05:29   8   A.   Sure. I got my degree -- my bachelor's degree

05:30   9   in -- at Syracuse University in 1982. I kind of moved

05:30   10 to Raytheon in 1982. I have been living in

05:30   11 Massachusetts since that time.

05:30   12   I live there -- I live in a small town in the

05:30   13 woods with my wife of 35 years and a very rambunctious

05:30   14 English cocker spaniel.

05:30   15   Q.   Did you help prepare a set of slides that will

05:30   16 walk us through your testimony?

05:30   17   A.   Yes. I did.

05:30   18   Q.   Using this first slide, can you please explain

05:31   19 to the jury your educational background?

05:31   20   A.   Sure. I got my bachelor's degree at Syracuse

05:31   21 University in Syracuse, New York. I then moved to

05:31   22 Raytheon company in Massachusetts, in Sudbury,

05:31   23 Massachusetts.

05:31   24   While I was at Raytheon, I worked part time on

05:31   25 my master's degree in electrical engineering. After I

314

05:31   1   finished my master's degree, I said that's enough of

05:31   2   this. And I applied for a scholarship program at

05:31   3   Raytheon to be able to do my Ph.D. full time.

05:32   4   And so it was one of two people in the company

05:32   5   that was awarded that scholarship that year. So I then

05:32   6   had a leave of absence that I was able to study again

05:32   7   at Worcester Polytechnic Institute, WPI, for my Ph.D.

05:32   8   After I finished my Ph.D., since Raytheon paid

05:32   9   for the Ph.D., I owed them some time of service. So I

05:32   10   went back to Raytheon, worked there for a few more

05:32   11   years. And then eventually a job opportunity came up

05:32   12   at Worcester Polytechnic Institute teaching, and I took

05:32   13   that job opportunity.

05:32   14   Q.   What is your doctorate's degree in?

05:32   15   A.   My doctorate is in electrical engineering.

05:32   16   Q.   Now, you mentioned Raytheon. What does

05:32   17   Raytheon do?

05:32   18   A.   Raytheon is -- was one of the big defense

05:32   19   contractors at the time. I worked on the Army and Navy

05:33   20   and Air Force systems for computer systems, radar

05:33   21   systems, missile systems, also worked a little bit on

05:33   22   the civilian sector at Raytheon at that time. I did

05:33   23   all the in-flight air traffic control in this country

05:33   24   and did air traffic control in a couple of other

05:33   25   countries, and I worked on some of those systems a

05:33   1   little bit.

05:33   2   Q.   What all appointments do you hold at Worcester

05:33   3   Polytechnic Institute?

05:33   4   A.   Yeah. I kind of refer to myself as the

05:33   5   corporate dumpster, because I get a lot of things

05:33   6   dumped on me.

05:33   7   I currently am a professor of robotics

05:33   8   engineering. I was one of the founders of our robotics

05:33   9   program at WPI about 13 years ago when I was a member

05:34   10   of the electrical and computer engineering faculty.

05:34   11   And about two years ago, we became -- robotics

05:34   12   became an actual academic department. So I figured

05:34   13   since I made that bed, I had to sleep in it. And I

05:34   14   moved from electrical engineering to robotics.

05:34   15   But a lot of the projects I do involve very

05:34   16   multidisciplinary teams, building a robotic sail boat,

05:34   17   building an electric race car and things like that.

05:34   18   So I currently have appointments to four

05:34   19   different academic departments. I'm a professor of

05:34   20   robotics engineering, a professor of electrical and

05:34   21   computer engineering, a professor of computer science

05:34   22   and professor of mechanical engineering.

05:34   23   Q.   Overall, how many years teaching experience do

05:34   24   you have in the electrical engineering field?

05:34   25   A.   More than 30 years at this point.

05:34   1   Q.   What are some of the courses that you teach

05:34   2   that are relevant to this case?

05:35   3   A.   Oh, over the years I've taught, you know,

05:35   4   electronic circuit design. I've taught computer system

05:35   5   design, computer system architecture, taught

05:35   6   programming courses. I've taught courses in

05:35   7   navigation, and just recently a course in ethics.

05:35   8   Q.   Have you done any research or writing about

05:35   9   technology that is relevant to this case?

05:35   10   A.   I have. I've written over 100 articles that

05:35   11 would be -- that were published in journals and

05:35   12 conference proceedings and written a book chapter. I'm

05:35   13 currently involved in writing a textbook on radio

05:35   14 navigation.

05:35   15   Q.   Have you received any awards or recognition

05:35   16 for your work?

05:35   17   A.   I have. I've won a number of best paper

05:35   18 awards in various conferences. When I got to WPI, a

05:36   19 couple of years after I joined the faculty, I was

05:36   20 awarded what they call the Samuel Satin award, which is

05:36   21 a chaired professorship that's given to promising new

05:36   22 faculty.

05:36   23   I won the Aldo Miccioli scholarship when I was

05:36   24 able to get my Ph.D. And a probably a few things I

05:36   25 can't think of at the moment.

317

05:36   1   Q.   Are you a named inventor on any patents?

05:36   2   A.   Yes.   I'm a named inventor on nine issued

05:36   3   U.S. patents.

05:36   4   THE COURT: Did you say -- I just missed

05:36   5   the number.

05:36   6   THE WITNESS: Oh, nine.

05:36   7   THE COURT: Thank you.

05:36   8   BY MR. RICH:

05:36   9   Q.   Have you in the past performed analysis of

05:36   10   patents to determine whether the patents were

05:36   11   infringed?

05:36   12   A.   I have many times.

05:36   13   Q.   How long have you been conducting analysis

05:36   14   like that?

05:36   15   A.   I started doing work as an expert witness in

05:36   16   the late '90s, early 2000s.   So it's been more than

05:37   17   20 years.

05:37   18   Q.   When you serve as an expert witness in a

05:37   19   patent case like this, do you charge for the time that

05:37   20   you spend conducting your analysis?

05:37   21   A.   Yes.   I do.

05:37   22   Q.   What's your rate?

05:37   23   A. $525 an hour.

05:37   24   Q.   Does your payment in this case depend at all

05:37   25   on the outcome of the case?

05:37   1   A.   No.   It does not.

05:37   2   Q.   Have you been qualified as an expert in patent

05:37   3   cases related to technologies like the ones we're here

05:37   4   to talk about today?

05:37   5   A.   I have several times.

05:37   6   MR. RICH: Your Honor, Textron

05:37   7   Innovations tenders Dr. Michalson as an expert in

05:37   8   electrical engineering and robotics, including the

05:37   9   subject matter of the asserted patents.

05:37   10   MR. YIN: We have no objection.

05:37   11   THE COURT: He'll be admitted.

05:37   12   Ladies and gentlemen of the jury, when I

05:37   13 asked the lawyers to come up to the bench, I asked them

05:37   14 how long they'd like to keep going and they both said

05:37   15 another two hours and I said no.

05:37   16   I'm kidding.

05:37   17   (Laughter.)

05:37   18   THE COURT: So that's the only time I get

05:38   19 to tell a joke.

05:38   20   Thank you very much for your attention

05:38   21 here today.   We will start with the doctor tomorrow

05:38   22 morning.   If you all would favor me by being here by

05:38   23 about 8:45, we will start as close as 9:00 as possible.

05:38   24   Please remember the instructions I gave

05:38   25 you earlier.   I hope you have a wonderful evening.

05:38   1   THE BAILIFF: All rise.

05:38   2   (Jury exited the courtroom.)

05:38   3   THE COURT: You may be seated.

05:38   4   First, I want to compliment the lawyers

05:38   5   on their opening arguments and the trial as it's gone

05:38   6   so far. I think you all have done a very nice job for

05:38   7   your clients.

05:38   8   What can we expect tomorrow from the

05:38   9   plaintiff in the morning?

05:39   10   MR. MEEK: Your Honor, we have --

05:39   11   THE COURT: Him all morning, I would

05:39   12 think.

05:39   13   MR. MEEK: Yeah. It will probably be --

05:39   14   MR. RICH: He has about two hours.

05:39   15   THE COURT: And then they'll have 10 or

05:39   16 15 minutes?

05:39   17   MR. RICH: Right.

05:39   18   MR. MEEK: Or less.

05:39   19   (Laughter.)

05:39   20   THE COURT: So I'm just saying, so we

05:39   21 have the morning taken care of. When we finish with

05:39   22 him, are there other -- any other nonexpert witnesses,

05:39   23 or would the next person be a damages person?

05:39   24   MR. MEEK: Next one's damages, Your

05:39   25 Honor.

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U.S. DISTRICT COURT, WESTERN DISTRICT OF TEXAS (WACO)

05:39   1   THE COURT: And then we rest?

05:39   2   MR. MEEK: Well, I will not because of

05:39   3   the Rule 50 agreement, but yes.

05:39   4   THE COURT: I understand, but will you be

05:39   5   done?

05:39   6   MR. MEEK: Yes.

05:39   7   THE COURT: That tells me that the

05:39   8   defendants will putting on evidence tomorrow.

05:39   9   And so who do I -- who should we

05:39 10   anticipate tomorrow?

05:39 11   MR. SCHROEDER: It would be our

05:39 12   corporate -- we'd be having Mr. Oushana -- he's a DJI

05:39 13   employee -- testify first.

05:39 14   THE COURT: Okay. I would make sure that

05:39 15   you have enough people -- I don't know how long the

05:39 16   damages will take. That may take most of the afternoon

05:39 17   as well. It shouldn't, but it's up to you all.

05:40 18   But I would make sure if I were the

05:40 19   defendant to make -- that you have -- that we fill the

05:40 20   day through 5:30 or 6:00.

05:40 21   MR. MEEK: Your Honor, the best laid

05:40 22   plans, et cetera. I think that Dr. Michalson, the

05:40 23   technical expert, will be about two hours. I think

05:40 24   Mr. Andrien, the damages expert, will be just over one

05:40 25   hour. So I would think there'll be lots of time.

05:40 1   THE COURT: Well, I'm doubling that

05:40 2   because they're going to have as much time, roughly.

05:40 3   I'm just assuming. And so that will take up most of

05:40 4   the day.

05:40 5   And then with their expert -- I'm

05:40 6   sorry -- with their corporate rep witness, that will

05:40 7   probably get us through the day. I just will not be

05:40 8   happy if after -- if we were to finish with him and it

05:40 9   was 4:30, you know, I'd want to keep going.

05:40 10   So and if you'll let the plaintiff know

05:40 11   who Witness No. 2 would be for you, whatever agreement

05:40 12   y'all have on that.

05:40 13   MR. SCHROEDER: Understood, Your Honor.

05:40 14   THE COURT: I don't know. I say these

05:40 15   things sporadically because I can't remember what I've

05:40 16   told you. If I haven't told you, you will not be

05:41 17   exchanging slides the night before closing argument.

05:41 18   That's -- you know, so when I think of these things I

05:41 19   try and tell you as they pop in my head.

05:41 20   Nothing else that we need to take up now?

05:41 21   MR. SCHROEDER: One thing, Your Honor.

05:41 22   THE COURT: Yes, sir.

05:41 23   MR. SCHROEDER: I believe tomorrow -- so

05:41 24   far we haven't gotten into anything that has required

05:41 25   us to seal the courtroom. But I imagine as we get into

05:41   1   technical details tomorrow, through the -- through

05:41   2   their technical expert and perhaps financial details

05:41   3   through their damages expert, there may come a time

05:41   4   where we need to do that.

05:41   5   How would Your Honor like to handle that?

05:41   6   THE COURT: Okay. So here are my rules

05:41   7   on that.

05:41   8   You are welcome -- because I'm sure it

05:41   9   will all be your stuff, so I'm not picking on you, it's

05:41   10   just I don't think the plaintiff has much. But

05:41   11   whenever you think there's going to be something that

05:41   12   is -- should be confidential and sealed, you are -- you

05:41   13   stand up and say, Judge, we'd like for this to be

         14   sealed.

05:41   15   Now, here's the obligation you have

05:41   16   though. I find in the vast majority of the trials I've

05:42   17   had, you all forget -- not picking on you all, but the

05:42   18   people on that side forget and we go for an hour and

05:42   19   then it's not been public.

05:42   20   So my rule is, I will seal the courtroom

05:42   21   whenever you ask me to, as long as you have someone

05:42   22   sitting there whose job it is that when it stops,

05:42   23   because I have no idea, when it stops being

05:42   24   confidential information, you'll stand up and say, I

05:42   25   want to go back on the public record.

05:42   1   If I find that you're not doing that,

05:42   2   then I will stop sealing the courtroom. Because I

05:42   3   like -- I think this should be as public as possible.

05:42   4   Anything that you all think needs to be sealed, I am

05:42   5   happy to seal. I just want to make sure you understand

05:42   6   the bargain is that it's y'all's responsibility to say,

05:42   7   Judge, we can go back on the public record. Because I

05:42   8   want as much of this to be on the public record as

05:42   9   possible.

05:42   10   Whatever you think needs to be sealed is

05:43   11   fine. I won't be unhappy. Just make sure that, you

05:43   12   know, that someone's paying attention to that.

05:43   13   MR. SCHROEDER: Understood, Your Honor.

05:43   14   THE COURT: Because I know y'all have

05:43   15   lots and lots of things to do. It's just something

05:43   16   that irritates me because -- y'all can figure out why,

05:43   17   I'm sure. In this job I have to strive to find things

05:43   18   that irritate me, because the job is so good.

05:43   19   But anything else we need to take up?

05:43   20   MR. SCHROEDER: That's it from

05:43   21   defendants.

05:43   22   MR. MEEK: Nothing from plaintiff, Your

05:43   23   Honor.

05:43   24   THE COURT: Here's -- tomorrow --

05:43   25   This doesn't need to be on the record.

05:43   1   (Off-the-record discussion.)

05:44   2   (Hearing adjourned.)

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1   UNITED STATES DISTRICT COURT)

2   WESTERN DISTRICT OF TEXAS   )

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5   I, Kristie M. Davis, Official Court

6   Reporter for the United States District Court, Western

7   District of Texas, do certify that the foregoing is a

8   correct transcript from the record of proceedings in

9   the above-entitled matter.

10   I certify that the transcript fees and

11   format comply with those prescribed by the Court and

12   Judicial Conference of the United States.

13   Certified to by me this 30th day of April

14   2023.

15

16   /s/ Kristie M. Davis
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